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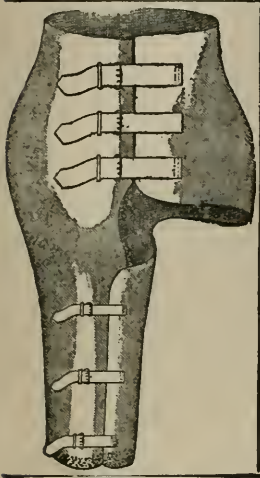

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GREAT BRITAIN.

1. The Edinburgh Medical Journal. Oliver and Boyd.
2. The Retrospect of Medicine. Edited by James Braithwaite. Simpkin, Marshall, and Co.
3. Pharmaceutical Journal. Churchill.
4. The Lancet.
5. The British Medical Journal.
6. The Journal of Mental Science. London: Churchill.
7. The Glasgow Medical Journal. A. MacDougall.
8. The Medical Press and Circular.
9. The Westminster Review. Trübner.
10. Transactions of Obstetrical Society. London: Longmans.
11. The Practitioner; a Monthly Journal of Therapeutics. Macmillan and Co.
12. The Journal of Anatomy and Physiology. Macmillan.
13. Brain. London: Macmillan & Co.
14. The Bristol Medico-Chirurgical Journal.
16. The Provincial Medical Journal.
17. The British Journal of Dermatology.

CANADA.

18. The Montreal Medical and Surgical Journal. Richard White. Box 386, P.O., Montreal.

AMERICA.

19. The American Journal of the Medical Sciences. Edited by Isaac Hayes, M.D. Philadelphia: Henry C. Lea. London: Trübner and Co.
20. The Medical Record. New York: William Wood & Co.
21. Medical News. Philadelphia: Henry C. Lea's Son and Co.
22. The American Journal of Science and Arts. Conducted by Professors B. Silliman, and J. D. Dana, &c. New Haven: Editors.
23. The American Journal of Insanity, Utica, N. Y. State Lunatic Asylum.
24. The American Journal of Obstetrics and Diseases of Women and Children. New York: William Wood and Company. London: S. Low, Son, and Marston.
25. The New York Medical Journal. New York and London: D. Appleton & Co.
26. The Medical and Surgical Reporter. Philadelphia: N. A. Randolph, M.D., and Charles W. Dulles, M.D.
27. Journal of Cutaneous and Venereal Diseases. New York: Wm. Wood and Co.

AMERICA.—*continued.*

28. The Times and Register. New York and Philadelphia.
29. Chicago Journal of Nervous and Mental Disease.
30. The St. Louis Medical and Surgical Journal. St. Louis: Geo. O. Rumbold and Co.
31. Journal of the American Medical Association. Chicago, Illinois.
32. Index Medicus. George S. Davis. Detroit, Michigan.
33. The Occidental Medical Times. James H. Parkinson, Editor, Sacramento, California.

FRANCE.

34. Répertoire de Pharmacie, Archives de Pharmacie, et Journal de Chimie Médicale réunis. Troisième Série. Paris: M. C. Crinon.
35. Gazette Médicale de Paris. Paris: 4, Place Saint-Michel.
36. Journal de Pharmacie et de Chimie &c. Paris: Victor Masson.
37. L'Union Médicale. Paris: Bureau, Rue de la Grange-Batelière.
38. Archives Générales de Médecine. Paris: Asselin.
39. Bulletin de l'Académie de Médecine. Paris: G. Masson.
40. Revue de Thérapeutique Médico-Chirurgicale. Paris: Masson.
41. Annales Médico-Psychologiques. Par MM. Baillarger, Cerise, et Lunire. Paris: V. Masson.
42. Bulletin Général de Thérapeutique. Médicale et Chirurgicale. Par le Docteur Félix Bricheteau. Paris.
43. Répertoire de Pharmacie. Par M. Eug. Lebaigue. Paris: Rue de la Perle, 11.
44. Annales de Gynécologie. Paris: H. Lauwereyns.
45. Gazette des Hôpitaux. Paris: 4, Rue de l'Odèon.
46. Lyon Médical, Organe Officiel de la Société Impériale de Médecine. Lyon: Mégret.
47. Revue des Sciences Médicales en France et à l'étranger. Paris: G. Masson.
48. Gazette Hebdomadaire. Paris: 91, Rue de Lille.
49. Revue de Médecine et Revue de Chirurgie.
50. Revue de Laryngologie, d'Otologie, et de Rhinologie. Paris: Octave Doin.
51. Annales des Maladies des Organes Génito-Urinaires. Paris: 22, Place St. Georges.

BELGIUM.

51. Bulletin de l'Académie Royale de Médecine de Belgique. Bruxelles: F. Hayez.

52. Annales d'Oculistique. Bruxelles.

GERMANY.

53. Archiv für Gynækologie. Redigirt von Credé und Spiegelberg. Berlin: August Hirschwald.

54. Centralblatt für die medicinischen Wissenschaften. Berlin: August Hirschwald.

55. Jahrbuch für Kinderheilkunde und physische Erziehung. Leipzig: B. G. Teubner.

56. Archiv für pathologische Anatomi und Physiologie, &c. Herausgegeben von R. Virchow. Berlin: G. Reimer.

57. Berliner klinische Wochenschrift Berlin: Hirschwald.

58. Archiv für klinische Chirurgie. Herausgegeben von Dr. B. von Langenbeck. Berlin: Hirschwald.

59. Archiv für Psychiatrie und Nervenkrankheiten. Berlin: August Hirschwald.

60. Zeitschrift für physiologische Chemie. Herausgegeben von F. Hoppe-Seyler. Strassburg: Karl J. Trübner.

61. Deutsche Medizinal-Zeitung. Herausgegeben von Dr. Julius Grosser. Berlin: Eugen Grosser.

62. Albrecht von Graefe's Archiv für Ophthalmologie. Göttingen: Professor Dr. Th. Leber.

63. Centralblatt für klinische Medicin, und Centralblatt für Gynäkologie. Berlin: Hirschwald.

NORWAY.

64. Norsk Magazin for Lægevidenskaben. Udgivet af det medicinske Selskab i Christiania. Christiania: Paa Th. Steen, Forlag.

SWEDEN.

65. Hygiea, medicinsk och farmaceutisk Maonads-skrift. Stockholm: P. A. Norstedt och Söners förlag.

66. Nordiskt medicinskt Arkiv. Redigeradt af Dr. Axel Key, Prof. i Patolog. Anat. i Stockholm. Stockholm: Samson och Wallin.

67. Upsala Läkareförenings Förhandingar. Upsala: Ed. Berling.

DENMARK.

68. Hospitals-Tidende. Optegnelser af praktisk Lægekunst fra Ind- og Udlandet. Kjöbenhavn: Jacob Lund. London: Asher and Co.

69. Bibliothek for Læger. Kjöbenhavn: C. A. Reitzels Forlag.

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ITALY.

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AUSTRALASIA.

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2. On Contractions of the Fingers and on "Hammer-Toe." By William Adams, F.R.C.S. Eng. Second Edition. London: J. & A. Churchill. 1892. 8vo. Pp. 154.

3. The Diagnosis of Syphilis. By John Kellock Barton, M.D., F.R.C.S.I. Dublin: Fannin & Co. 1892. Third Edition. Pp. 27.

4. Europhen in der Augenheilkunde. Von Dr. D. Juan Santos Fernandez. Uebersetzung aus Cronica Médica-Quirúrgica de la Habana. Band XVII. No. 24., p. 800. Pp. 4.

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6. World Wide Missions. Vol. IV. Nos. 10 and 11. May and June, 1892. New York and Chicago.

7. Thirty-first Annual Report of the Cincinnati Hospital for the year ending December 31st, 1891. Cincinnati. 1892. Pp. 99.

8. The Essentials of Histology. By E. A. Schäfer, F.R.S. Third Edition. London: Longmans, Green, & Co. 1892. 8vo. Pp. 302.

9. Microscopical Observations on the Blood and Excreta in cases of Cholera. By Surgeon Patrick Hehir, M.D., F.R.C.S.E. Indian Medical Gazette. April, 1892.

10. Pathological and Etiological Relations of Tropical Suppurative Hepatitis. By Surgeon-Captain Patrick Hehir, M.D., F.R.C.S.E. Madras: G. W. Taylor. Pp. 19.

11. The Wills Eye Hospital. Reports for 1890 and 1891. Philadelphia. 1891 and 1892. Pp. 26 and 26.

12. On a Condition of the Urine met with in Phthisis. By W. Hale White, M.D., F.R.C.P. Reprint. 1892. Pp. 4.

13. Revue Générale de Médecine, de Chirurgie, et d'Obstétrique. Première Année. Juin, 1892. No. 22. Paris: O. Doin.

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15. Mémoires couronnés et autres Mémoires publiés par l'Académie Royale de Médecine de Belgique. Tome XI. Troisième et Quatrième Fascicules. Bruxelles: F. Hayez. 1892.

16. Remarks on Thorough Operations for Cancer of the Female Breast. By W. Roger Williams, F.R.C.S. Eng. Pp. 4. 1892. Manchester: John Heywood.

17. Medical Electricity. By W. E. Steavenson, M.D., and H. Lewis Jones, M.A., M.D. London: H. K. Lewis. 1892. 8vo. Pp. 446.

18. The Medical Bulletin. Vol. XIV. No. 5. May, 1892. Philadelphia: F. A. Davis Co.

19. The Abstract and Index. Vol. VII. No. 1. April, 1892. Weston, Vt.: H. H. Howe.

20. The National Bulletin. Nos. 81, 82, and 83. June, 1892.

21. The Medical Reporter. Volume I. Nos. 1, 2, 3, 4, 5, 6. Calcutta. 1892.

22. A Manual of Chemistry. By Arthur P. Luff, M.D., B.Sc. (Lond.), M.R.C.P. London: Cassell & Co. 1892. 8vo.

23. Historical Retrospect of Sanitation. By Surgeon-Captain Patrick Hehir, M.D., F.R.C.S.E. Pp. 26.

24. Two successful cases of the Conservative Cæsarean Section. By Charles Jewett, A.M., M.D. Brooklyn, N.Y. Reprint. Pp. 9.

25. To what extent is the Diagnosis of Pregnancy possible in the early months? By Charles Jewett, M.D. Pp. 8. 1891. Reprint.

26. The Pharmaceutical Journal of Australasia. Vol. V. No. 4. Sydney. April 25, 1892. [Duplicate copies.]

27. Medical Review. Vol. XXV. No. 23. St. Louis, Mo. June 4, 1892.

28. A Handbook of Hygiene and Sanitary Science. By George Wilson, M.A., M.D., F.R.S. Edin., D.P.H. Camb. Seventh Edition. London : J. & A. Churchill. 1892. 8vo. Pp. 751.

29. Transactions of the American Orthopedic Association. Fifth Session. Volume IV. Philadelphia. 1891.

30. Printers' Ink. Vol. VI. No. 23. New York. June 8, 1892.

31. Fourth, Fifth, and Sixth Annual Reports of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Harrisburg : Edwin K. Meyers. 1889. 1890. 1891.

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33. The Journal of the British Dental Association. Vol. XIII. No. 6. June 15, 1892. London : Baillière, Tindall & Cox.

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MEDICAL SCIENCE.

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THIRD SERIES, No. CCXLVII.—JULY 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

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Digitalin, 1/100 gr.
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Dover Powder, ½ and 5 gr.
Euonymin Resin, 1/8 gr.
Exalgin, 2 gr.
Ferrum Redactum, 2 gr.
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Hydrarg. Iod Rub., 1/20 gr.
Hydrarg. Iod Vir., 1/8 gr.
Hydrarg. Perchlor., 1/100 gr.
Hydrarg. Subchlor. (Calomel), 1/10, ½, and 1 gr.
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Potash Nit. (*Sal Prunella*), 5 gr.
Potass Permanganate, 1 and 2 gr.
Quinine, 1/10, and ¼ gr.
*Quinine (Soluble), 1, 2, 3, and 5 gr.
Reduced Iron, 2 gr.
Rhubarb, 3 gr.
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THE DUBLIN JOURNAL

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MEDICAL SCIENCE.

JULY 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Clinical Observations on Pleural Effusion with Displacement of the Heart.*[a] By W. LANGFORD SYMES, L.R.C.P.I., &c., Kiltegan, Co. Wicklow.

THE subject which I wish to introduce is one, I think, well deserving of investigation, and I trust a brief review of it will not be uninteresting, inasmuch as displacement of the heart in effusions of either pleural sac is sometimes the source of intense anxiety to the clinical physician, occasionally of sudden death to the patient, and ever of great interest to the physiologist. It is well illustrated by the following case, which is no way more remarkable than many others, except perhaps in its being allowed to run so long without being tapped:—

CASE.—A healthy man of twenty was suddenly seized with severe rigors, which lasted for five hours. Two hours after the shivering ceased I found his T. 102·4°, P. 120, Resp. 28; he was very hot and flushed on the left cheek, severe pain shooting through his left lung, unable to draw a full breath, and feeling very sick and faint. On examining his chest I found slight dulness and diminution of free vesicular breathing over the lower lobe of the left lung behind, with peculiar "cogged-wheel" or interrupted respiration. There was loud puerile breathing all over the right lung, but otherwise the chest was healthy. He was ordered a diaphoretic mixture of tinct. aconit.; spt. æth. nit.; with liquor am-

[a] The substance of this paper was read before the Birkenhead Medical Society, Session 1887–88.

moniæ acetatis every two hours, and fever diet, while linseed poultices were continually applied.

Next morning his pulse had fallen to 100, but T. and Resp. still the same. On examining the chest the dulness was more marked, vocal resonance, and all respiratory sounds completely lost over left base; the puerile breathing in the right lung very loud and distinct—in fact, all the usual signs of effusion. The following day (3rd) I was suddenly called to see him, as he had fainted on getting out of bed, but was quite restored when I arrived. The effusion now steadily increased, and on the 4th day his condition was as follows:—Temp. 99·8°, P. 100, Resp. 24. Absolute dulness with resistance, and complete loss of vocal phenomena and breath sounds over the left base as high as the spine of the scapula, crossing in front to the level of the 5th rib. There was no apex beat to be seen or felt anywhere on *either* side of the chest, but the heart was under the sternum, the first sound reaching its maximum intensity at the base of the ensiform cartilage. He complained of great pain in the left shoulder, a troublesome dry cough and slight dyspnœa, these symptoms being the chief ones throughout the attack. He was ordered a mixture of—

℞. Potass. acetatis, gr. 8;
Tinct. digitalis, ♏ 8;
Spt. juniperi, ♏ 15;
Spt. æth. nitrosi, ♏ 20;
Liq. ammon. acetatis, ʒi;
Decoct. scoparii, ʒss—every 4th hour;

and iodine was applied to the lung.

On the 7th day his T. was 101°, P. 120, R. 24. He lay on his back, inclining towards the right side, saying it was impossible to turn on the left owing to the pain in the shoulder, dyspnœa and anxiety.

By the 8th day the fluid had reached the 2nd rib, dulness extending high up into axilla, crossing midsternum at the 5th rib; notwithstanding, the urine had become very copious, and he had perspired profusely. Decubitus still the same; intercostal spaces depressed and not yielding to the pressure of the fluid. The heart was completely dislocated from the left side, and, protruding from beneath the right border of the sternum, pulsated between the 4th and 5th right costal cartilages. On the 12th day the chest presented a most remarkable condition. The effusion increasing, had encroached still more on the right side, pushing up the left lung under the 1st rib and compressing it against the spine—the only resonant portion being that above the 2nd rib, which elicited on percussion the peculiar tympanitic note described by Skoda and Hudson. This note contrasted remarkably with the full, healthy, resonant sound yielded by the right lung, and the absolute "femoral" dulness over the fluid immediately beneath. The heart was still further displaced to the right,

beating at a point one inch above and slightly internal to the right nipple. The first sound, however, was loudest over body of the left ventricle in the sternal end of the 4th interspace. From this date signs of absorption gradually developed, vocal phenomena returning with ægophony and feeble respiration until, on the 18th day (Fig. 1), the fluid had receded to the level of the 4th rib, allowing the heart to return beneath the sternum and the upper lobe of the left lung to once more expand during inspiration; over this area, above the 4th rib, the Skodaic tympany had disappeared, and a peculiar fine crackling crepitation was heard at the end of each inspiration precisely similar to Laennec's first stage of pneumonia. This I attributed to the air for the first time re-entering the smaller bronchi and alveoli of the upper lobe and forcibly separating their walls, which had been so long collapsed from pressure of the fluid.

On the 22nd day, T. 98°, P. 76, dulness still up to 4th rib, heart beating at 5th left cartilage; respiration easy, and he lies chiefly on the left side.

The remaining serum now became rapidly absorbed, and he quickly regained his strength. He was ordered the citrate of iron and ammonia, with counter-irritation to the lung. A fortnight later (32nd day) all effusion had disappeared, and he was quite well and walking about. The heart once more pulsated in its normal position, but seemed more exposed towards the base owing to the incomplete expansion of the lung. A cardio-pleuritic friction sound was now heard over the 3rd rib.

A week later (41st day) I stripped him and made a careful examination of his chest, finding distinct evidence of commencing hypertrophy of the right ventricle, and commencing emphysema of the right lung. The left side of the chest was $2\frac{1}{2}$ inches smaller than the right at 3rd rib, and measured 2 inches less at the level of the 5th rib. There was deficient expansion of the left lung, evidenced by inspection, but particularly when—standing behind him—the sides of the chest were grasped by the hands—the left feeling quite thin like a book, whereas the right was hyper-distended, and felt as if one was endeavouring to grasp a football.

He was ordered syrupus ferri iodidi, and a month later was perfectly well, with the exception of a contracted left side.

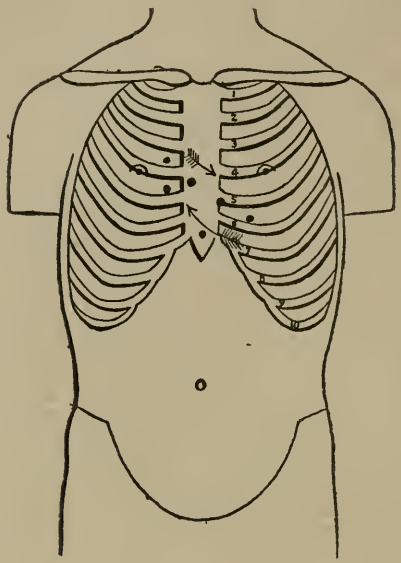
The gradual displacement of the heart in effusions of the left pleura affords the most interesting subject for observation and thought at the bedside, as literature on this point is singularly wanting. Many authors do not even allude to it, others give it but a passing notice; while those who attach most importance to it are Dr. Mitchell Bruce[a] and the late Drs. Stokes[b] and

[a] Quain's Dictionary of Medicine. Art. Displacement of the Heart.

[b] Diseases of Chest. 1837. Pp. 449 *et seq.*

Townsend.[a] Professor Finny[b] has, however, contributed by far the most valuable and instructive paper on the clinical aspects of this subject.

Fig. 1.



We observe, first (Fig. 1), that the apex strikes in a position about midway between its normal site and the base of the xiphoid cartilage. As the distension goes on the heart "buries" itself under the sternum, and its impulse is for a time lost. It presently emerges from beneath its right border, pulsating vigorously under the 5th costal cartilage, and as the effusion increases it is dislocated in a direction upwards and to the right. These facts were observed by Stokes as early as 1837. It may now be discovered beating in the right nipple line as high as the 3rd interspace, or, as in an extreme case which I once witnessed, may even pulsate beneath the anterior fold of the right axilla. From this abnormal site it gradually returns as the effusion becomes absorbed, but on close observation will be found to pass back on a plane from $\frac{1}{2}$ to 1 inch higher than its original course, and thus regain its normal position by a shorter and more direct route across the front of the thorax. Now two factors, I believe, exist which combine to

[a] Cyclopædia of Practical Medicine (Forbes). Art. Displacement of Heart.
[b] Transactions of Academy of Medicine in Ireland. Vol. I. 1883.

produce this peculiar alteration in the heart's path. The one is *apparent*, the other *real*, and both are dependent upon the imperfect expansion of the lung. When the effusion becomes rapidly absorbed, and the lung cannot with equal rapidity burst its adhesions and distend its thickened and hypertrophied pleura, the left side commences to fall in, and the ribs become approximated. Each rib will now be found to occupy a more inferior position than it did before with reference to the thoracic viscera, so what is apparently a superior course taken by the heart on its return to the left side may be in reality a depression and approximation of the ribs, making it appear to return on a higher plane. The other factor (and this the most potent, operating before the side falls in, *and while the heart is still to the right of the mesian line*) is a true change in the direction of the heart's path, by which it can with the greatest rapidity again reach the left side. It is, in fact, drawn directly into the potential vacuum caused by the rapid recession of the fluid. These I believe to be the true explanations of this interesting phenomenon, which, if the initial course taken by the heart has been carefully noted, cannot but strike the most casual observer. Again, this superior course of the heart across the chest being, as we have seen, directly dependent upon the non-expansion of the lung, may be found to be proportional to it, an early clinical evidence of it, and a measure of the diminution in its volume—provided, of course, it be not bound by adhesions.

The lung may, however, eventually expand to its former size, and the heart resume its normal position; but such conditions are rare after large or protracted effusions. Moreover, if this expansion be complete and truly *proportional to the absorption of the fluid*, the heart will probably be found to return by its original course. It is evident that the displacement under consideration occurring, as it does, concurrently with the absorption, cannot be due at this early stage to the contraction of any adhesions between the pleura and pericardium, which have, in fact, not been in contact. For even in the later stages of pulmonary cirrhosis such upward displacements of the heart are, as has been pointed out by Dr. Mitchell Bruce, more atmospheric than cicatricial in origin.

Equally interesting points in connection with this subject are the mechanism by which the displacement to the right is produced, and the anatomical relations of the heart which admit of

its production; and a glance at these rough diagrams may help to elucidate my description. We must remember that the heart is chiefly attached by its superior and right borders, at the right and upper extremity of the long cardiac axis (Bruce) corresponding for all clinical purposes to a point about midway between the 3rd costal cartilages, and that it is lying loosely in the pericardium, suspended, as it were, obliquely from this fixed point by the great vessels and deep process of the cervical fascia. It may thus be regarded as being normally displaced to the left, the attachments being mainly in the mesian line, and as being capable of greater movement to the right than towards the left.

From these facts it follows that when pressure is exerted on either side of the pericardium, sufficient to displace the heart (Fig. 5), its apex moves somewhat in the arc of a circle whose centre is this fixed point and radius, the long cardiac axis, cutting the chest wall at the base of the xiphoid cartilage, the 5th intercostal spaces on either side in the right and left parasternal lines, and a point about 1 inch outside each nipple, whereas the base may remain comparatively stationary unless the distensile force be so great as to displace the entire contents of the mediastina. The more movable heart is, however, first acted upon. Hence, in any given case, if we find the apex outside this circle, we may conclude that the basic attachments of the heart have been severely compressed, their relations altered, and that the case is fraught with extreme danger. This I observed in the foregoing case, and accounts for the impulse being above the right nipple on the 12th day at least 1 inch higher than the normal level of cardiac dulness. But besides this revolution round its basic attachments, rotation on its long axis must also occur, with the result that, if to the right, the left ventricle and auricle become anterior, while the right ventricle and right auricle are rotated into a posterior position, and lie at the back of the heart on the front wall of the posterior mediastinum.

Moreover, we find this rotation is, in a minor degree, one of the normal visible movements of the heart,[a] for, "during each succeeding systole the heart is seen to twist slightly on its long axis, so that while the base is fixed the apex moves from the left and behind towards the front and right, displaying more of the left ventricle; the cycle being completed during the diastole by the flattening of the ventricles, the heart turning back towards the

[a] Foster. Text-book of Physiology.

left." Again, these are the positions in which the cavities are most frequently found when it is congenitally displaced to the right,[a] the auricles and ventricles occupying positions exactly the contrary of their relative ones on the left side, the apex pointing downwards and to the right.

The reverse of course takes place in "sinistrocardia" from right effusions, but displacement is more limited here from the oblique suspension of the organ by nature, and rotation towards the left having thereby already occurred. Such rotation during displacement I believe accurately accounts for two peculiar signs existing in this case—viz., *more vigorous impulse* and *louder first sound* than when the heart was in its normal site, due, doubtless, to the anterior position of the left ventricle.

I can find no allusion to these signs as clinical evidences of rotation in any work on the chest, though they are very striking. Dr. Frederick Roberts,[b] however, attributes the impulse to the right ventricle. In other respects the sounds are normal. With Dr. Douglas Powell's[c] opinion that the axis of the heart can never diverge beyond the vertical line or only to a very slight extent, and that the apex does not point to the right, my observations on these cases do not coincide. The chief resistance to this displacement is that offered by the right lung and right wall of the mediastinum, but these cannot be at all considerable, since we have seen a slight amount of effusion is sufficient to overcome them, and they yield long before the intercostal muscles or diaphragm.

When, however, the right lung has become indurated from disease, or its pleura thickened or adherent, it is clear that displacement cannot occur easily, and there arises in these cases a fertile source of danger from its compression against these unyielding structures.

Under these conditions the respiration will be found very much distressed and *out of proportion to the extent of the disease, per se.*

The left pulmonary vessels would seem to have no restraining influence, for when we consider that the left lung has ere this been compressed against the spine and mediastinum, these vessels are thereby relaxed and rendered useless for the time being.

[a] Breschet. Memoire sur l'Ectopie du Cœur. Repertoire Général d'Anatomie. Vol. II.

[b] Theory and Practice of Medicine.

[c] Disease of Lungs.

The other dangers of dexiocardia must not be forgotten. They are mainly due to twisting of the venæ cavæ, leading to thrombosis or occlusion of these thin vessels, and also I think the curvature in the right branch of the pulmonary artery, which, in this position of the heart, must be extreme, and on which the aeration of the blood now almost entirely depends.

Regarding the peculiar form of decubitus assumed in this case (half right and half dorsal), it is rare to see a patient lie so much on the healthy lung when such a large effusion exists in the opposite pleural sac, and no explanation, as far as I know, has ever been given for this strange phenomenon, although repeatedly observed in severe cases.[a] Now, careful clinical observation on this point has convinced me that—(1st) This posture is indicative of an effusion of fluid of *exceedingly high tension* into the opposite pleura, not necessarily an enormous one; and (2ndly) that by this position its tension is lessened.

So much indeed has been written on this subject that one hesitates to enter on it. However, I will mainly allude to his three symptoms.

Their explanation is, I believe, the following. When he lay over on the left side, the abdominal viscera gravitated to beneath the left ala of the diaphragm (which was distended by the effusion), exerting pressure on its under-surface, and probably causing his shoulder-pain through the cervical connections of the phrenic nerve. This upward pressure likewise *increased the tension of the fluid*, and, tending to further displace the heart, produced cardiac dyspnœa and "præcordial anxiety," compelling him in a few minutes to turn on the other side. Similarly, contact of the side with the bed when lain upon would have the same effect. Undue stress has been laid upon the so-called "weight" of the fluid on the mediastinum preventing decubitus on the sound side, as originally stated by Le Dran; for potent as this is in cases of empyo-pneumothorax where atmospheric pressure comes into play, it is impossible to conceive its action in simple effusion into the pleura, which is a shut sac, closed to the external air, where the

[a] "Thus Isenflamm relates a case where a patient presenting all the usual signs of empyema lay generally on the *right* side, which, for this reason, was supposed to be the seat of the disease; accordingly the operation was performed, but no pus was found. The patient died, and on dissection it was discovered that the *left* side was the seat of the empyema. Morgagni relates a case of this kind on the authority of Valsalva; and M. Baffos records another instance." *Cf.* Stokes. Diseases of the Chest. 1837.

pressure of the fluid is uniform in every direction, and incapable of increase by gravitation. Moreover, this is borne out by the experiments of M. Richerand on hydrothorax artificially produced. Now it is the *tension* of the fluid, I believe, which causes most of the trouble, and this appears to be distinctly lessened by lying on the sound side, which, by removing the abdominal viscera, allows the diaphragm to "bulge" downwards and the capacity of the affected side to be proportionally increased.

All possible freedom must, however, be given to the healthy lung, as pointed out by Richerand,[a] Townsend, and Chomel;[b] but in the foregoing case *the distress from increased tension so far exceeded that from embarrassed respiration* that the relief of the former became an urgent necessity, while the free expansion of the right lung was of secondary importance and had to be performed under difficulties.

Hence, it is clear that conditions indicating distress on change of posture (dyspnœa, pain, anxiety), whether arising from increase in the tension of the fluid—lying on the affected side—or interference with respiration—lying on the sound side—are exclusively produced by influences operating *outside the thorax* (position of abdominal viscera, conditions preventing free descent of diaphragm or elevation of the ribs); and hence we also find that the form of decubitus chosen by the patient is that in which the tension of the fluid is least, and in which, at the same time, the healthy lung has least interference with its free expansion. Thus, this patient lay on his *right side* as far as his abdomen and legs were concerned, but, in order to free the right lung as much as possible, endeavoured to rotate his thorax into a *dorsal* position.

Further proof of the influence of tension in determining decubitus is afforded by comparing the symptoms during the accumulation of the fluid when its tension is at its maximum and organs are being displaced, with those during absorption when the fluid is receding, and its tension reduced to a minimum, the level of the effusion being in both cases the same.

Let us take the 4th rib. We find on the 7th day, T. 101°, P. 120, R. 24. The effusion, rapidly increasing, has reached this level: he has had two attacks of fainting within the last 3 days on very slight exertion; the heart is on the right of the mesian line; his decubitus is half right and half dorsal, and in this posi-

[a] Cycl. Practical Medicine. Art. Empyema.
[b] Dictionaire de Médecine. Art. Pleurisie.

tion he is compelled to remain, every attempt to turn on the affected side being followed by shoulder-pain, dyspnœa, and anxiety. By the 22nd day the fluid has again receded to this level: T. 98°, P. 76; his respiration is easy, and he can lie and sleep in any position on either side, but *prefers the left*, as this has now become the most comfortable. The heart pulsates under the 5th left cartilage, and he has only one recurrence of fainting during the last three days.

Now, the differences in the symptoms on the above dates can, I think, be due only to alterations in the tension of the fluid, its level being identical in each case. For while it is evident that fluid cannot accumulate in the pleura until its tension exceeds the pressure of the atmosphere, it is likewise true that during absorption its tension is so far below this standard that the pressure in the affected side actually becomes negative, and if the lung cannot expand, deformity necessarily results. Furthermore, I believe that the more rapid the effusion, the higher will its tension be found, and the greater the distress produced by it; and, *vice versâ*, that the more gradual and "quiet" the effusion the less is its tension and the milder are the accompanying symptoms.

Again, since (1) *Tension* and (2) *Compensation* are the two conditions which determine a simple or serious case, and on which paracentesis will frequently depend, the symptoms indicating high tension in the fluid are of great clinical value. They will be found to be:—

1. Decubitus on the healthy lung, or difficulty in lying on the effusion.
2. Fixed or peculiar decubitus: where the patient is constrained to lie in one position.
3. Dyspnœa out of proportion to the amount of disease.
4. Where upward or lateral pressure on the affected side produces distress or dyspnœa.

The extent of dulness, estimated quantity of fluid, or displacement of the heart are no safe guides either in prognosis or treatment.

In support of these views, which, as far as I know, have not been hitherto advanced, it is satisfactory to notice that, while they clear up the difficulties heretofore enveloping this subject, and reconcile the conflicting statements of most accurate observers

(each in itself correct),[a] they also explain the anomalous clinical facts that we sometimes see copious effusions in persons free from constitutional disturbance or local distress who can lie equally well on both sides; that some patients lie on the healthy and others on the affected side; that the same patient lies at different periods on each side; and finally they prove by their analogy with the notes of Dr. Finny's case that when the heart cannot be dislocated owing to the resistance of structures indurated by disease, any excessive elevation in the tension of the fluid is a potent cause of sudden death.

Of displacement of the heart to the left there seems to be less clinical experience. In a case recorded by Dr. Hayes[b] of right empyema reaching to within three inches of the clavicle, "the cardiac apex was considerably displaced to the left, and the heart sounds were weak," but there was no murmur—the feebleness being possibly dependent upon the complete seclusion of the left ventricle from left rotation. In these cases of sinistrocardia the risks of sudden death would seem to be greater than those attending right displacement, arising from pressure of the fluid on the thin walls of the venæ cavæ and right auricle—which must be extreme before the entire heart will be dislocated to the left—torsion of the cavæ as a natural consequence, and the possibility of a dangerous increase in the natural curve of the aortic arch.

Since the heart may be regarded as being normally displaced to the left in health, its axis forming with the mesian line an angle of about 40°, it is probable that few dangers attend dislocations to the right of an equal extent, but this point exceeded they are much increased. As bearing on this, syncope occurred in the foregoing case but once while the heart was within these limits and *three times* afterwards.

One other point of great interest must be noticed—viz., the pathology of the "tympanitic" (?) note under the clavicle.

From the time when Skoda, in 1839, published his theory of

[a] Thus Bichat and Roux stated that pressure upwards on the side corresponding to the effusion caused extreme distress; while Townsend and Chomel found the very reverse to be the case, upward pressure on the sound side being intolerable, while that on the affected side was borne with impunity—the former being correct in severe cases with high tension and peculiar decubitus, and the latter true in moderate effusions or during stage of absorption where the tension is low and patient lies on the affected side, and where upward pressure on the sound side will impede the action of the diaphragm.

[b] Transact. Acad. Medicine in Ireland. Vol. I. 1883.

percussion sounds, difference of opinion has existed as to its nomenclature and significance. "*Le bruit Skodique*" of the French, or our "Skodaic resonance," is probably the least confusing, as these terms convey nothing but its peculiarity, for even "Hudson's tympany" may mislead, since Dr. Gee declares it is not "tympanitic" at all.

It is the clearest and most musical "tone" or resonance yielded by the thorax, differing both from pneumothorax or emphysema. It is only noticed when the effusion is very great and during the height of its pressure, while its very sound gives one the idea of conditions of great tension underneath. In Dr. Hayes' case "*loud bronchial respiration with moist râles*" were heard over the part, but, as in my case, I take the râles as the first effort of this part of the lung to regain its function after compression, whereas the loud tubular breathing must be transmitted from elsewhere, such excessive activity here being incompatible with a perfectly placid side. Again, I found the Skodaic resonance entirely disappear when the moist crepitus of returning function became established, almost proving its dependence on compression and inactivity of the part.

Now in a healthy lung percussion produces a "*clear*" tone in the bronchi, but owing to the defective conduction of the alternate media of vesicular structure and air-sacs, it reaches the surface not as a clear, but a "muffled" resonance. Could we here interpose a more perfect conducting medium we should lose the muffling and get the bronchial tones less altered.

For the foregoing reasons I believe the pathology of this note to be: *Healthy lung, compressed against the bronchus* so tensely that it is rendered functionless, and acting as a more perfect conductor than the normal blood-vascular vesicular structure, transmits to the front of the chest the normal tracheal or bronchial percussion tones less muffled than in health, while the rough bronchial or tubular breathing is also conducted from those tubes. As the tension is withdrawn the tubular breathing becomes less, the fine moist crepitation tells us that the air is re-entering the alveoli and inflating them once more, while the peculiar percussion sound has entirely disappeared.[a]

[a] This view is much simplified if we believe, with Wintrich and Dr. Gee, "that the minute vesicular elements of the lung and the minutest bronchiols are both singly and collectively too small to resonate, the pulmonary percussion tone being produced in the middle-sized and largest bronchia; and the vesicular or spongy structure is nothing

Since writing the above I have had the opportunity of examining this man's chest again after a lapse of 2 years. The left side has increased 1½ inches at the level of the 3rd rib, measuring now only 1 inch less than the right. At the 5th rib there is still 2 inches difference and 1½ at the xiphoid base. Hypertrophy of the right lung has transgressed the left sternal line and raised the right nipple to the upper border of the 4th rib; the left nipple has fallen to the 5th rib, but owing to the depression of the whole left side and shoulder girdle is only ½ inch further from the clavicle than the right. The apex beat is displaced upwards and to the left to half way between the parasternal and left mammary lines on the upper border of the 5th rib. This is more apparent than real—the result of the deformity.

A cyrtometric tracing at the level of the left nipple shows a considerable antero-lateral diminution in the capacity of the left side, extending from the sternum to near the angles of the rib, and averaging a depth of 12 mm. and a contraction posteriorly between the spine and these angles of 5 mm., while at the angles the left side bulges posteriorly 3 mm. beyond the outline of the hyper-distended *right* side. These discrepancies being the combined effects of left contraction and right distension can form no criteria of the extent of the former. Thus it is interesting to note that contraction of one side can *increase* its measurement in one diameter (the sterno-angular), that this diameter can exceed that in the hyper-distended side, and that it is produced by antero-posterior compression of the ribs, with protrusion of their angles.

The whole left side being considerably below the level of the

but an inert membrane as far as concerns the production of tone." However, while admitting the subordination of the vesicular structure to the bronchi in producing tone, the dulness over pneumonia prevents one accepting this *in toto;* for then a pneumonic patch should merely conduct the bronchial percussion tones more clearly, as it does the breathing, instead of sounding dull.

Clear tones can be produced by other conditions, such as over large closed air-containing cavities with elastic walls of moderate tension, or a smaller air sac with its mouth partly open under greater tension; but these do not exist over a pleural effusion,

Other explanations are :—

"Relaxation of the pulmonary tissue" of the German writers.

Air in the minute tubes of the carnified lung—Dr. Walsh; while Dr. Bristowe attributes it to the diminished vibrating area of the thoracic walls. Dr. Goodhart, in an interesting paper on the behaviour of fluid in the chest (*B. M. J.*, June 4, 1887), takes it as an indication of generally-impaired resonance all over the affected side, produced by diminished volume of air under the part percussed, or diminished vibration of the walls of the chest. However, he admits that this diminished resonance must have some other cause besides the fluid, as this is often very small.

right, and no efforts having been made to elevate it to this level no curvature of the spine has resulted. He enjoys excellent health.

As Dr. Finny's case is a most interesting example of left pleural effusion terminating in sudden death, his kind permission enables me to briefly epitomise it here, as forming a valuable contrast to mine, and since much may be learned from their analogy:—

Case.—A delicate lad of nineteen was seen on December 21, 1882, with a pleural effusion to the 6th rib and slight dextrocardia; intercostals healthy; decubitus generally dorsal or towards the right side, and in that position he used to take his meals; cough, muco-purulent sputum; resp. slightly over $\frac{1}{4}$ of the pulse: remittent fever from 100° to 103°, and pulse 100 to 120. The upper lobe of right lung presented signs of numerous small cavities filled with air and fluid, with comparative dulness and coarse râles, but no bronchophony—conveying the idea that the lobe was rapidly breaking down. By the 27th the fluid had reached the 4th interspace; his breathing became much worse, with diffuse pain in left side; a cardio-pleuritic friction sound was heard over the sternal ends of the 3rd interspace and 4th rib. On the 28th evening he seemed fairly well, but his breathing was difficult; he slept well, lying on his right side, but his breathing continued bad. The nurse roused him at 3 a.m. to give him nourishment, raising him up in bed to try and ease his breathing; his expression changed, indicating his end was near. He became bathed in perspiration, and although stimulants were given, his breathing still continued the same, and he died at 5 45 a.m.

Post-mortem.—The left side was almost full of fluid and the membranes covered with recent lymph. The whole of the right lung was adherent to the ribs, particularly the upper lobe, and the pleura was thickened all over the lung; its upper lobe presented remarkable fibroid changes hitherto undescribed. The lobules, though mapped out and filled with air, were separated by fibrous and cartilaginous septa. The vesicular structure was replaced by thick and dense fibrous tissue. The whole lobe was honeycombed by a series of minute labyrinthine cavities, varying in size from a pea to $\frac{1}{2}$ an inch in diameter, while some were quite discrete and unconnected with bronchi.

In remarking on the sudden death of this lad Dr. Finny lays great stress on the rapidity with which the effusion is poured out, and the suddenness of the pressure on the heart, as conditions of great danger; and in attributing its fatal termination to a sudden effusion into the pleura on the night of his death, regrets he was not present to draw off the fluid, although never previously was there any indication of its necessity.

For many other most interesting notes I must refer to his original paper.

The comparison of these two cases is most instructive, and their analogy teaches us many facts which cannot be gathered from either alone. Both cases of acute left pleurisy, in lads of the same age, with very peculiar decubitus. In one the right lung was healthy, and, as the fluid increased, yielding to the displaced heart, allowed it to pulsate freely on the right side till the effusion abated; while at the same time, being functionally perfect, it fully compensated for the loss of its fellow. In the other, this lung was diseased, and although the effusion was less, and displacement of the heart slight, sudden death resulted.

Now, in addition to imperfect compensation, it seems probable that the indurated lung and thickened pleura must have here offered very considerable resistance to the displacement of the heart, so that the two vital conditions on the part of the opposite lung which admit of such dislocations being produced with safety—viz., freedom to yield and health to compensate—being seriously impaired by dense adhesions and chronic disease, whatever chances a simple case might have Dr. Finny's patient was deprived of. The heart, in fact, was fatally compressed against these unyielding structures.

The evidence in this case of the influence of high tension is very strong in that the decubitus was very striking, the breathing was very difficult, and the right lung refusing to give way, the heart was compressed into a state of asystole against it.[a]

I have now under my care a case of left pleural effusion in a feeble man of sixty-seven, complicated with acute pneumonia of the right lower lobe. The heart is heard loudest under the sternum, and the impulse—if any—is here also. The fluid reaches the 8th rib behind, but not at all in front. His breathing is fast, *but since he can lie and sleep in any posture on either side*, the tension of the fluid is low and he is recovering without paracentesis.

Figure 6 is the bedside tracing of a young lad of eighteen on the 13th day of his pleurisy, with P. 88, T. 100°, resp. 32, fluid reaching the clavicle and crossing the sternum at the 3rd rib, the

[a] Hilton Fagge, alluding to sudden death in pleurisy, cites two cases, one with double pleurisy and great dyspnœa for some days previously, which he attributes to "exhaustion of the respiratory centre;" while in the other, which died after an hour's extreme dyspnœa, it was observed that the *pulse ceased before the respiration* — the latter observation seeming much nearer the truth.

heart's impulse being between the 5th and 6th ribs to the left of the right nipple line, but the maximum intensity of its first sound under the right side of the base of the xiphoid cartilage. Six days later on its return to the left side the centre of the heart was found between the 4th and 5th right cartilages, having gone up one space. In this case there was very little distress; he lay and slept on the back inclined to the affected side, but could turn well on both. There was no fainting, and "*le bruit Skodique*" was not observed—all these points showing that the tension of the fluid must have been low, although the effusion was apparently considerable. We must not forget that liquid may be held in suspension over the surface of the lung to a shallow depth unaffected by the laws of gravity; and many cases with a large area of dulness, but mild symptoms and low tension, are probably of this nature.

In concluding this subject for the present the following facts appear sufficiently well-established to warrant their recapitulation:—

1. That displacement of the heart may occur as early as the fourth day; that a moderate effusion can produce it; and that it may be preceded and accompanied by fainting on exertion.

2. That it occurs before protrusion of the intercostals, and the heart may even pulsate beyond the right nipple while they are not affected.

3. That, owing to the peculiar basic attachments of the heart, the apex can move in the arc of a circle, right or left; that the heart appears to rotate upon its long axis; and that this rotation in dexiocardia may increase the distinctness of its sounds and impulse.

4. That the heart does not return by the same route, but on a plane somewhat higher, and that this course, whether real or apparent, is dependent upon the non-expansion of the lung.

5. That extreme displacement may exist without either *bruit* or palpitation, and does not *ipso facto* necessitate paracentesis.

6. That it is extremely dangerous for the patient to undergo any exertion when it is so displaced, owing to the many risks of sudden death.

7. That decubitus on the sound side, or in a semi-dorsal position inclined to that side, appears to lessen the tension of the fluid; that it is always a grave symptom, and an urgent indication for paracentesis to relieve tension.

8. That "*le bruit Skodique*" is caused by the compression of

healthy lung against the bronchus, thus acting as a better conductor of sound; that it is closely connected with high tension; and that it disappears when the intra-thoracic pressure falls.

9. That the dangers of displacement being intimately connected with the condition of the opposite lung, the extent of dislocation, *per se*, forms no criterion—some slight displacements ending fatally, while other extreme ones are borne with impunity.

ART. II.—*Trephining for Meningitis.*[a] By J. S. M'ARDLE, F.R.C.S.; Surgeon and Lecturer on Clinical and Operative Surgery, St. Vincent's Hospital.

IN bringing this subject under your notice, I have two objects in view. 1st, to place on record a case which I will hereafter detail; and 2nd, to elicit your opinion in reference to a line of treatment which suggests itself to me for the relief of some, at least, of the forms of meningeal inflammation. We have all seen cases of syphilitic tubercular and traumatic meningitis die, and not infrequently does a meningeal effusion terminate life in cases of alcoholism. Now, elsewhere, in areas open to surgical interference, in cases where tension is tending to a fatal result, local or general, we aim at relief of that tension by incision and free drainage, and I think the time has arrived for applying this surgical principle to the last of the closed cavities, to be handed over to the tender mercies of the surgical side of the profession. For long the physicians could not see their way to surgical intervention in cases of serous or other collection, in the peritoneum, pleura, or pericardium; but the advances of modern surgery have emboldened them, and far from in any way impeding our advance, they are the first to see the necessity for all justifiable operations on these regions.

We still linger by the cradle of brain surgery, and let us hope that with the aid of the highly skilled diagnosticians whom we now boast, we may ourselves witness the advantages of its adolescence.

The case I am about to detail is an instance in which I felt that vigorous surgical interference was demanded but would not be permitted, and you will agree with me that life might have been saved if my suggestion had been carried out.

[a] Read before the Section of Surgery of the Royal Academy of Medicine in Ireland, on Friday, May 20, 1892. [For the discussion on this paper see page 78.]

Case I.—James Egan, aged thirty-eight years, was crushed by a horse against the side of his stall, sustaining injuries to his chest and back. After a time he complained of severe pain in the back and right side of head, gradual loss of strength, and general mental weakness. He came under my care in the following condition on May 10th, 1890:—

He was apathetic, answered questions very slowly, and all response to questions of any kind was very tardy. His pulse was slow (50 per minute), soft, and full. Temperature subnormal, ranging from 95·6° to 97·8°, occasionally in the evening reaching 98°. From the first, emotions, if he experienced any, affected only his inner self, his blank face never bearing any evidence of their existence. He was able to move about, but his movements seemed purposeless. All through he took nourishment freely, and the urinary and digestive systems were normal.

All our efforts at relieving the distress by blistering and the exhibition of mercury proved fruitless, the patient going from bad to worse, first losing control of his legs (a condition necessitating confinement to bed), then a similar condition of the arms set in, so that he was never able to assume a desired position without aid.

The power of co-ordination was completely lost, while muscular action was not interfered with. If asked to put his hand to his head or to reach for anything, the result was painful to witness. The poor fellow would vainly endeavour to control the movements of the limb, which generally went in every direction but the proper one; and usually when the other arm was requisitioned to aid the unsteady member, a series of eccentric bimanual movements resulted—rarely, indeed, ending in the performance of the desired act. This state of things continued for some days, then deglutition and respiration became affected; and, notwithstanding all our efforts, he died on May 26th, 1890.

The *post mortem* revealed a thickening of the membranes of the upper part of the cord; and at the base of the brain, effusion under the tentorium, compressing the cerebellum and medulla, was found to be the cause of death.

Now this is a case in which there was no direct cranial injury, but nevertheless death resulted from intra-cranial pressure, and a trephine opening into the cerebellar fossa would have relieved the symptoms and probably saved life; and my suggestion is, that what we do for intra-osteal pressure elsewhere should

be done in such cases whether arising as the result of tubercular, syphilitic, or other meningeal inflammation. I have examined the membranes of the brain in fatal cases of tubercular meningitis, and although the majority showed diffuse meningeal thickening, I can recall several in which only a few small, grey nodules were found, such as are discovered in cases of peritoneal tuberculosis which end favourably after irrigation. A similar result should, at least in some cases, follow interference in the cases under discussion. The case I have just related occurred in a syphilitic subject, and, no doubt, his constitutional condition at the time of the accident predisposed him to the affection from which he ultimately died; but the *post mortem* disclosed only a removable cause, and one which, but that my hands were tied, would have been removed, and very probably with success.

The next case which I am about to relate comes within the category of inflammatory troubles, although some would say that it was one of subdural hæmorrhage.

Case II.—William Green, aged forty, was admitted to Saint Vincent's Hospital on the 3rd December, 1890, when the following history was elicited:—On Saturday, November 15th, he fell into the hold of a vessel, striking the left side of his head; he was removed in an unconscious condition to Sir Patrick Dun's Hospital, where a wound over the left eye was dressed. In a few hours consciousness returned, and he went home the same evening. The next day being Sunday, he rested, and on Monday resumed his work as coalporter. All went well with him until Monday, December 1st, when he felt disinclined for work, had some sickness of stomach, and noticed his left hand weak. During the evening of that day he experienced severe pain in the top of his head, and the weakness of the arm increased. On Tuesday, sixteen days after the accident, he found the left leg becoming powerless, and the following day he came under my care. He then had partial paralysis of left arm and leg. There was a scar over the left eye; pulse, 54; temperature, 96·5°; pupils normal, and respond to light. Although he seemed stupid he answered quickly and accurately. I had his head shaved, and the most careful examination did not disclose any external evidence of injury on the right side. It was evident from the slow pulse and sub-normal temperature, as well as the paralysis, that compression of the brain was present.

The history (early unconsciousness, then an interval, and now rather rapid occurrence of paralysis) pointed to secondary hæmorrhage; but the fact that pressure symptoms so gradually increased convinced me that, although a hæmorrhage might be the primary cause, inflammatory trouble must have supervened. Ice was applied to head, and mercury administered; but the symptoms grew worse, until, on the morning of the 5th (fifty hours after admission), the following note was sent to me by Dr. Garret Hickey, to whose able assistance are due many of my successes, both in private and in hospital practice:—

"Dec. 5th—Green slept pretty well during the night; but at 6 a.m. I was called, to find that he had just had a convulsive attack, which weakened him very much. At 7 20, I saw him again, and learned that in the interval he had had several, only 5 to 10 minutes elapsing between each." The attack which caused him to send an urgent message for me he describes as follows:—"The fingers of the left hand contract firmly into palm. The hand is then flexed on the forearm; pronation then takes place while the arm is being elevated straight up from the body. About this time deviation of the eyes to the right occurs, and the face soon follows in the same direction, contraction of left face being marked (for the first time gurgling in the throat and difficulty of breathing are noticed); the arm now drops, not suddenly, but by short jerks, and the left leg works convulsively." He winds up this hurried, but accurate and expressive note by saying, "I would wish you to come as soon as possible. He is perspiring freely, and is much exhausted after the exertion." I hurried to the hospital, saw a repetition of the performance, so well described by Mr. Hickey, and a picture of greater distress I never witnessed. Fortunately, the patient was totally unconscious, and had been so for some time. The temperature was still subnormal, and the pulse varied from 45 to 50 per minute. In the last attack which I witnessed, and the last we allowed him to get, respiratory difficulty was very pronounced, the poor fellow becoming cyanosed. I felt that further delay would be criminal. Removing him to the theatre, I at once removed the piece of bone exhibited (Fig. 1.) The dura mater projected into the wound, looking very dark. On incising it, a greenish, serous fluid gushed out, and on raising the membrane, after detaching it three-fourths of the way round, I found a clot adhering firmly to its inner surface. This

I scraped away. After thoroughly irrigating the parts with boracic solution, I sutured the dura mater, laid a medium sized drainage-tube across the wound, passing deep sutures to fix the scalp flap. For some time there was a copious serous oozing, which necessitated frequent change of the dressings; but late in the evening drainage seemed complete, and at 3 a.m. on the 6th, consciousness returned, the patient raising at the same time the arm which had been paralysed, and saying to the nurse in charge, "Begor, I've the use of myself, ma'am."

Fig. 1.

From this time recovery was uninterrupted, and on the 14th, that is, eight days after operation, the patient was about, the wound being soundly healed. The ultimate result of the operation you have witnessed. The patient you have examined has never lost one day's work through ill health since his dismissal from our convalescent home, one month after operation.

In determining the position at which to apply the trephine, I was guided chiefly by the starting point of the spasms, and I cut down in the area which gave me the greatest chance of reaching the hand and arm centres, as the convulsive seizures started in these centres, and spread to those of the face downwards, and to those of the leg upwards.

Fig. 2 shows the exact situation in which I trephined, as you may see by comparing the plate with the patient's head. Now this was the exact spot at which an adherent clot was found, and when we come to study the next plate, Fig. 3, we find that this area corresponds exactly with the supposed situation of the hand and arm centres, and one can easily explain the course of the case from gradual loss of power of the hand and arm to a loss of power of the lower extremity, and ultimately to a complete left-sided paralysis. Extension forwards of the pressure would explain the conjugate deviation of the eyes towards the

side of the lesion, and extension backwards would account for loss of sensation and of consciousness.

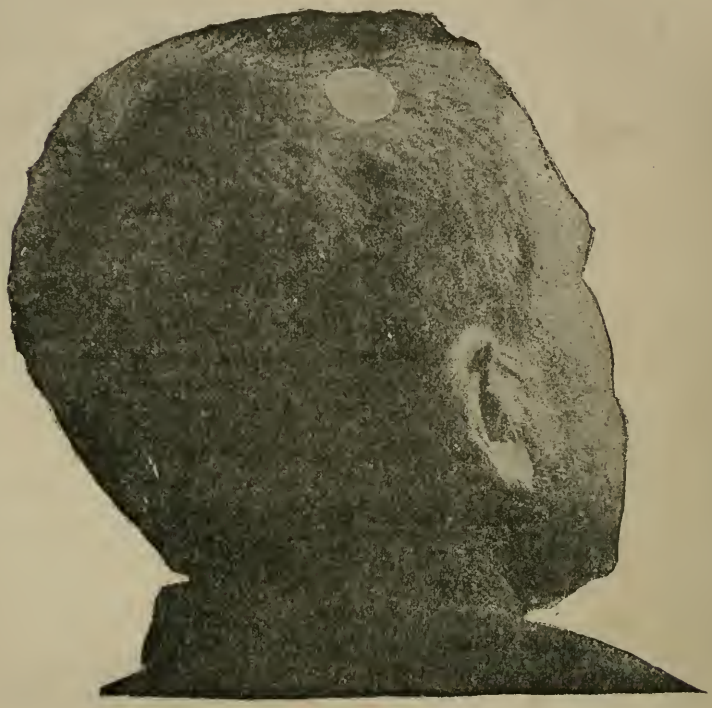


Fig. 2.

In this case a small blood clot was, no doubt, the starting-point of the trouble, but a localised meningitis was the condition for which, after consultation with my colleagues, I trephined this man. The operation confirmed the diagnosis, and the result which you have witnessed fully justified the undertaking. Before operation I was careful to mark the line of Rolando's fissure, but when the patient was anæsthetised and brought into the theatre, I did not like the direction of the line marking the fissure, and on re-measuring the fronto-occipital line I found that on the previous occasion I had placed the upper end of that line half an inch too far forward, as in the first marking I had commenced the measurement by placing on the tape (*vide* Fig. 4) at the root of the nose, and thus in subdividing the distance a

Fig. 3.

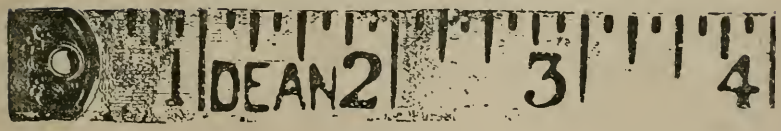


Fig. 4.

difference of half an inch occurred. Now, as the clot removed was adherent to the dura, a faulty marking might have led to less favourable ending. I merely mention this error, as it is possible others could fall into a similar one, and the warning may be of service. During the operation, Mr. Patteson, who had charge of the patient, called my attention to a curious effect of the working of the trephine, the explanation of which I would be glad to elicit. Before operation and during the intervals occupied in examining the depth of the trephine wound, the

pulse never was above 54 per minute. The moment I exerted pressure the pulse went up to 80, and this change occurred on every similar occasion all through the operation.

Before definite symptoms of meningitis showed in this case my notion was that secondary effusion of blood occurred during some effort at lifting heavy weights, and I was deliberating over which of the hæmorrhagic areas described by Kronlein, and depicted in the accompanying woodcut, Fig. 5, it would be advisable to trephine should no improvement take place.

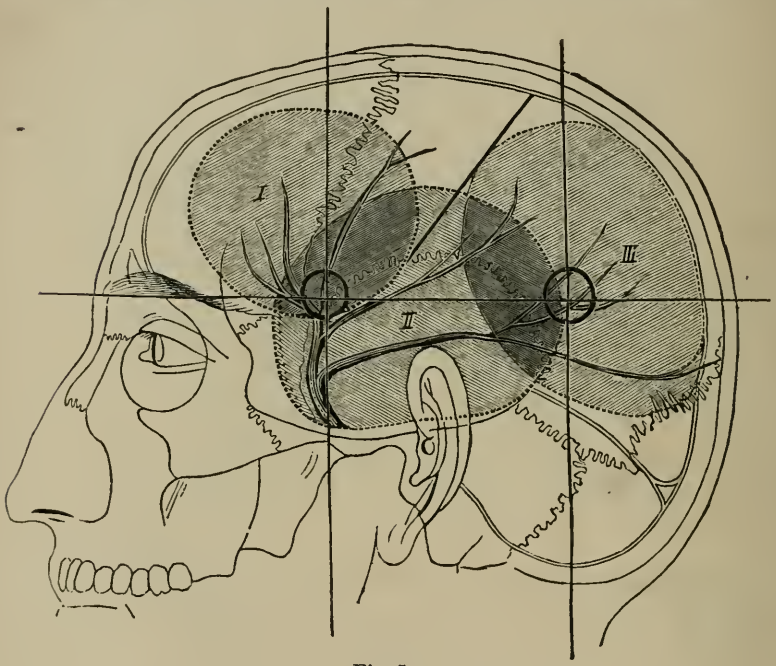


Fig. 5.

That in perforating the skull in the situations selected one strikes important meningeal branches is shown by the pieces here depicted—Fig. 6—which I removed by a trephine of

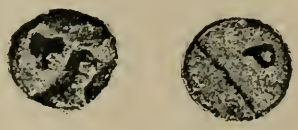


Fig. 6.

only 8 mms.—one comes on the anterior, the other on the posterior division of the middle meningeal artery. In the absence of definite focal symptoms, and with symptoms of meningeal hæmorrhage, I would be inclined to adopt Kronlein's suggestion and seek the clot in either of the positions marked out, as a trephine of 16 or 20 mm. would expose with certainty clots or effusions of any size if applied at the points indicated.

As the diagram is instructive I take the liberty of laying it before the Academy, in the hope that some members more versed in the anatomy of the cranium than I am may express an opinion on its merits or demerits as a guide in operations on that part.

The points of the case I desire to recall are—1st, there was unconsciousness immediately after the accident lasting some hours; 2nd, there was no trace of injury to the right side of the scalp; 3rd, there was evidence of a wound over the left eye; 4th, the patient worked at a laborious occupation for well-nigh three weeks after the injury; 5th, death was imminent from laryngeal spasm immediately before operation; 6th, serum, not blood, was the immediate cause of pressure symptoms; and 7th, the membranes were thickened and showed that meningitis had been set up.

Some years ago, when the question of surgical treatment of intra-cranial hæmorrhage was so ably stated here, the term "trephining-epidemic" and such epithets were used, reminding one of similar expressions regarding operations on the abdomen when the surgery of that cavity was forging ahead in spite of every obstacle. To no chapter in the history of our art can the student of surgery turn with greater pleasure than to that on the modern surgery of the brain, and none can he peruse with greater profit; and I may be forgiven if I say that I am proud that the impress of Irish surgery is there indelibly stamped, and that by members of this Section of the Academy. Feeling that I only add a brief and halting record to this glorious page, I can but crave your pardon for thus occupying your time and to such slight purpose.

ART. III.—*The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach.*[a] By ALFRED R. PARSONS, M.B. (Univ. Dubl.); late House Surgeon in Sir P. Dun's Hospital.

PATHOLOGICAL observation and experimental investigation, particularly the latter, have done much to aid clinical diagnosis, and to render feasible operations which seemed little short of impious to our forefathers. The physician can often, from the clinical history and symptoms, now localise a cerebral abscess with sufficient certainty to justify a surgeon in applying his trephine and attempting to drain it. A clearer knowledge of the origin and functions of the spinal nerves has enabled the neurologist to point accurately to a certain level as the seat of spinal pressure, and the surgeon's knife has confirmed the accuracy of the diagnosis, and by the removal of the tumour made life a pleasure where it had been full of pain. Certain symptoms and signs referable to one hypochondriac region, and the presence in the urine of a small quantity of caseous pus, containing tubercle bacilli, justify, with certain restrictions, a recommendation of surgical interference, and the excision of a kidney with a localised tubercular focus has saved an otherwise forfeited life. Opening the peritoneal cavity demanded at one time no less an atonement than the life of its possessor; but to-day the surgeon, strong in his antiseptic precautions, does an exploratory laparotomy with greater coolness and confidence than he can find in the administration of chloroform to a child. But though much has been done in the past, and many lives have been saved by the combined action of physician and surgeon, much still remains to be done, and I trust that the day is not far distant when the man who dallies with acute perforative peritonitis will be equally guilty with the practitioner who follows the hounds knowing a patient of his is suffering from a strangulated hernia, and then calls in some one else to share the responsibility with him. To one of the causes of acute perforative peritonitis—namely, chronic ulcer of the stomach—I desire in this paper to refer; and I would wish, from my very limited experience, to attempt to deduce the phenomena which indicate the occurrence of perforation, and then suggest what seems to be the only line of treatment offering any hope of

[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, May 6, 1892. [For the discussion on this paper see page 76.]

success. The following cases came under my notice last year, as House Surgeon in Sir P. Dun's Hospital, and my best thanks are due to the staff of the hospital for permission to record them, and for the assistance they gave me in looking up the literature bearing on this subject:—

Case I.—Michael C., aged twenty-seven, a well-built, muscular man, was brought to hospital about 9 a.m. on Saturday, 28th March, in an almost unconscious condition. The history we obtained from his friends was, that he had been engaged at his usual work, and apparently in perfect health, till 12 noon on the previous day, when he was seized with violent abdominal pain, which doubled him in two. He went to bed, and as the pain did not subside, medical aid was called in. The doctor who saw him administered castor-oil and opium by the mouth, applied stupes to the abdomen, and gave an enema. His relatives were advised to have him moved to hospital the following morning, if there were not a decided improvement in his condition. During the afternoon he vomited some reddish-coloured fluid, which was thought to be blood. He passed rather a sleepless night, suffering considerable pain, but was able the following morning to assist in dressing himself, preparatory to removal to hospital. On admission he was cyanosed, pupils were dilated, sweating on forehead, pulse almost imperceptible, abdomen somewhat distended and very tympanitic. *Complete loss of liver dulness.* It soon became impossible to feel the pulse at the wrist, and within fifteen minutes after admission respiration had ceased. In this case the physical signs, combined with the history, left little doubt that we were dealing with a perforation, and the diagnosis of acute peritonitis due to perforating ulcer of the stomach was almost quite accurate. At the *post-mortem* examination we found recent acute generalised peritonitis, evidently produced by the rupture of a small round ulcer situated just at the commencement of the duodenum. The other organs, as far as they were examined, appeared quite free from disease.

Case II.—Miss M. G., aged twenty-one, was admitted to Sir P. Dun's Hospital about 10 30 p.m. on Saturday, the 28th November, 1891, suffering from intense abdominal pain. She told us that her general health, with the exception of occasional attacks of constipation, accompanied by pain, had been good till the onset of her present illness. She gave no account of vomiting blood or of pain after taking food. The history of her illness dated from Thursday, 25th November, though since the previous Sunday there had been no motion of the bowels, and she had had slight attacks of pain referred to the abdomen. These attacks, however, were not sufficiently severe to have prevented her from attending

to her daily work. On Thursday, at 8 p.m., just two days before her admission to hospital, she was seized suddenly with an attack of violent abdominal pain, accompanied by vomiting. On the next day, as the pain was still very severe and the vomiting continued, the family physician was called in. He administered soap and water enemata, and glycerine enemata, but failed to move the bowels. A dose of castor-oil, which was not vomited, was likewise ineffective. On the following day (Saturday) Dr. Ball was asked to see the patient in consultation. He visited her in the afternoon and recommended her immediate removal to hospital. On admission some four hours later the patient, who was well nourished and developed, appeared to be suffering considerable pain. The cheeks were of a bluish red hue, but the lips, conjunctivæ, and gums were rather anæmic. The tongue was coated with white fur, and the breath was fœtid. Respirations were hurried (45 per minute), and the alæ nasi were working actively. The frequency of the pulse was likewise considerably increased—132 per minute, small in volume and feeble. Her heart and lungs showed no indication of organic disease. The temperature was 96° F. The abdomen was considerably distended, though not uniformly tympanitic; it was tender to the touch, but the pain was, of anything, referred rather to the left than to the right side. The area of hepatic dulness was reduced to about two fingers' breadth. After consultation it was decided to postpone operative measures till the following morning, in the hope that the patient would then have recovered from the shock consequent on moving her, and that the advantage of operating in daylight would more than counterbalance any risk attendant on a delay of 9 or 10 hours. She had some morphin during the night, and the following morning, though her condition was very critical, it seemed that an operation would afford her the only chance of recovery. It was thought probable, from the history of the case, and particularly from the fact that the perforation—if perforation it were—must have occurred some 56 or 60 hours previously, that the lesion was connected with the vermiform appendix. The abdomen was therefore opened in the middle line, between the umbilicus and symphysis pubis. All the indications of recent acute peritonitis were present, but a careful examination of the vermiform appendix and pelvic viscera failed to disclose the cause. Dr. Ball then proceeded to explore the upper part of the abdomen, but finding the transverse colon perfectly free from any inflammation, concluded that the source of the mischief could not lie in that direction. The cavity was accordingly flushed out with warm water, and a drainage tube was inserted. The patient died that evening at 6 o'clock. A *post-mortem* examination disclosed the presence of a perforating ulcer, situated about the middle of the anterior wall of the stomach. One of the most unusual features in this case is the length she survived the perforation. Hilton Fagge says that if the patient live more than one day after the onset of

perforative peritonitis, the probabilities point strongly to a perforation of the vermiform appendix, as nearly all the cases of ruptured ulcer of the stomach are fatal in less than 24 hours.

Case III.—About 9 15 a.m. on Monday, 21st December, 1891, I was asked to see a lady who had been a patient in the hospital on three or four occasions during the years 1890 and 1891, suffering from attacks of severe pain referred to the stomach. These attacks were not very closely related to meal times, as they occurred sometimes before, sometimes after, and often quite independently of partaking of food. She never vomited any blood. Consequently, though gastric ulcer, amongst other possible diagnoses, presented itself to the minds of those under whose care she was, I am not aware that any absolute diagnosis had been made in her case. These attacks of pain had often been greatly relieved by taking 10 grs. of antipyrin. I heard she had returned from her professional duties only the previous evening, and learned from herself that, four days previously, an attack of pain more severe than usual had set in. Though she continued at her work she was, owing to the severity of the pain, able to take but little food during this period. She returned to town on Sunday evening, but could not sleep till 6 o'clock the following morning. She slept then for some two hours, and awoke a little after 8 in most violent pain. I was accordingly asked to see her, and found her about 9 30 a.m. still suffering considerably. She referred the pain chiefly to the left hypochondriac region. The pulse was 100 per minute, respirations were tolerably deep. An examination of the region to which the pain was referred failed to detect anything abnormal. On auscultation the heart sounds seemed unaccountably feeble. I regret to say that I failed to recognise the nature of this case at once, because I did not grasp the fact that she had had a sudden onset of very violent pain at 8 a.m., and I understood from her that the pain was not quite so bad as it had been a little previously. I recommended the application of stupes to the side, and administered a small quantity of a stimulating carminative mixture. However, on thinking over the case it struck me that very probably it was a perforation that had taken place, and I was confirmed in this opinion when I saw her an hour or so later; for at 11 a.m. the collapse was much more marked, the frequency of the pulse had increased to 110, finger nails were blue, face was drawn and anxious, and notwithstanding application of stupes and hot bottles patient was rather cold. Dr. Finny saw her shortly afterwards, and it was decided to remove her to hospital. A hypodermic of morphin and a stimulating enema were administered by his directions, and soon after her admission she rallied considerably, but the frequency of her pulse had increased to 120. On examination the area of hepatic dulness was found to be diminished, and the note over the hepatic region abnormally tympanitic. A catheter was

passed and several ounces of urine free from albumen and indican were drawn off. A soap and water enema removed a small quantity of fæcal matter. By Dr. Finny's order a consultation of the staff to decide on the advisableness of operative measures was summoned for 4. By this time the pulse had increased somewhat more in frequency, but otherwise there was no marked change in her condition. After consultation it was decided to open the abdomen. Dr. Ball made the incision in the middle line above the umbilicus, and the moment the peritoneum was incised an escape of gas confirmed the diagnosis of a perforation, the site of which was found to be the anterior wall of the stomach, in its lesser curvature near its junction with the œsophagus.

The wall of the stomach all round the perforation was thickened, swollen, and so soft that sutures at once cut through it. The external circumference of the stomach at this part appeared to be so small that no hope could be entertained of excising the ulcer completely without leaving too great a constriction. Nothing could, therefore, be done except, by means of sutures passed through the healthy tissue, to draw the stomach up to the edge of the abdominal wound and carefully stitch them together. The peritoneal cavity was then washed out, and the lower part of the abdominal incision closed, leaving a gastric fistula. After the operation the pain in the abdomen ceased, she vomited only seldom, suffered little inconvenience from the wound beyond that due to a very profuse flow of highly acid gastric secretion, which irritated the skin for some distance round it, and may in some degree be answerable for the fatal issue.

Into the further details of this case it is not necessary to enter. Suffice it to say that she rallied well, and continued to improve till Wednesday, when a change for the worse set in, and she gradually sank till death occurred at 5 50 on Sunday morning—just six days after the perforation had taken place. A more unfavourable site for a perforating gastric ulcer can scarcely be imagined. Had it been more fortunately situated, the diseased tissue could have been easily excised, the opening closed with Lembert's suture, and the stomach returned to the abdominal cavity.

From these cases we may, I think, draw the more usual symptoms of perforation. In only one case was the previous history of any assistance to us in arriving at a diagnosis; while the other two presented no symptoms before their illness which could have aroused our suspicions of an internal ulcerative process. In diagnosticating a perforation of the stomach, we have to rely mainly on the sudden onset of very violent pain, often described by the patient as doubling him in two, the accompanying collapse,

pallor, and anxious expression of the face, a pulse small in volume, compressible and steadily increasing in frequency; vomiting is also often, though not invariably, present; and the respiration will probably be rapid, chiefly thoracic, and productive of pain on deep inspiration. If we see the patient a few hours later, the severity of the pain may be slightly abated, the collapse not quite so marked, and the colour improved, but the frequency of the pulse has increased from 90 or 100 to 110 or 120, with probably diminished volume and augmented compressibility. Visiting our patient some hours later—say 12 or 14 after the perforation has taken place—he expresses himself as much better; he has no longer the intense pain from which he suffered earlier in the day; there is no impairment whatever of his intellectual faculties; but, on the contrary, he is quite clear and collected, and looks to you to confirm the favourable opinion he has formed of his own condition. But, as you take his clammy hand in yours, and try to count the pulse, now barely perceptible at the wrist, as you feel the cold extremities, and see the sweat gathering on the pallid countenance, you read the words "No hope!" written clearly on every feature. The prognosis is soon equally evident to the untrained eye. Restlessness comes on, slight delirium sets in, the pulse can no longer be felt, respiration becomes quick, shallow, irregular, slow, and finally ceases, in the majority of cases, in from 12 to 24 hours after the perforation took place.

Such I take to be a fairly typical history of a case of perforative peritonitis, whether it be left to nature or treated as such cases are generally treated. And we have now to ascertain what light does the *post-mortem* examination afford us? is the pathological condition, if persistent, necessarily followed by this sudden change from apparent health to death? and, if so, are there no means by which this condition can be removed or modified? At the autopsy we find a body well developed, well nourished; on external inspection disclosing nothing except, possibly, some slight distension of the abdomen; the brain and its membranes are apparently perfectly healthy; detailed examination of the thoracic viscera discloses no disease; in the abdomen nothing morbid, except an acute diffuse peritonitis, evidently owing its origin to an extravasation of the contents of the stomach through a perforation in its wall. Must we not, as we stand by the opened body on the *post-mortem* table, feel humiliated that lesions such as these, situated not in the pons, medulla, internal capsule, heart, or

any other region sacred against the intrusion of the surgeon's knife, but in the stomach—an organ which in man has been incised frequently, partly excised, and in the lower animals completely removed with success—should have been the cause of death? In this the age of gastrectomies, gastrostomies, gastro-enterostomies, pylorectomies, are these specimens not a reproach to our diagnostic skill, or operative courage? And must that reproach not grow deeper as we gaze upon the well-built body, not emaciated by prolonged fever or mal-nutrition, and examine the remaining viscera, not affected by any trace of disease, and fail to find in all anything but that small ulcer inconsistent with a prolonged and vigorous life?

But, it may be asked, is death, in the absence of operative measures, a necessary consequence to general peritonitis produced by the rupture of a gastric ulcer? To this I may briefly reply—Death is, in such cases, practically speaking, an inevitable result. I have examined carefully the literature of this subject, and can find recorded only 9 cases which presented symptoms indicative of a perforation of a gastric ulcer and recovered. Of these, 3 died subsequently from this affection, but in only one of them did the *post-mortem* examination seem to confirm the original diagnosis. This case is reported by Hughes, Ray, and Hilton in "Guy's Hospital Reports" for 1846:—"A servant girl was suddenly seized with all the symptoms of perforation. Fortunately she had eaten nothing for four hours before this, and then only gruel. She was put under the influence of opium, was kept in the recumbent posture, and was fed by the rectum. She was discharged apparently cured after 52 days. Two months afterwards she was again suddenly seized with the same symptoms, and she died in four hours. The autopsy showed, in addition to a recent peritonitis, evidence of old peritonitis. There were adhesions of the coils of intestines with each other, and between the stomach and adjacent viscera. In the stomach were found a cicatrix and two open ulcers, one of which had perforated."

Such a record out of the many fatal cases of gastric ulcer which have been reported fully justifies Mr. Treves when he says, "The lover of the curious will search long before he can find in the literature of perforative peritonitis the account of a well-authenticated recovery without operative interference;" and gives, for all practical purposes, a direct negative to the inquiry in such cases—Is there any hope?

If the prognosis, then, in these cases when left to nature or as usually treated be hopeless, can we do nothing when called to a patient presenting the symptoms I have enumerated? It seems to me that our duty under such circumstances is threefold:— 1. To avoid increasing the mischief already done. Consequently all food, medicine, and stimulants by the mouth should be strictly prohibited. 2. To relieve the agony which the patient is suffering by a hypodermic of morphin, and to combat the collapse by the administration of stimulants per rectum 3. To recognise *early* that the case before us is one imperatively demanding immediate operative interference. This appears to me, under such circumstances, to be the highest function of the physician's art, and while sometimes the diagnosis may be quite evident, in others it requires great care to form, and courage to express, such an opinion. It is not to be expected that a physician should, as it were, see through the abdominal wall and accurately describe the nature and seat of the lesion; but ought he not to recognise that he has to do with some urgent intra-abdominal lesion imperilling his patient's life, and probably connected with the rupture of a hollow viscus, and that the only way in which the diagnosis can be completed and the patient's life saved is by an exploratory laparotomy? But the sceptic will probably ask, what has an abdominal section ever done for perforative peritonitis due to rupture of a gastric ulcer? I regret I can only point to a life prolonged a few days and to a less painful death in the cases I record in this paper; and I am free to admit that I have searched the literature of this question without finding one successful case. The explanation of this, I believe, is not far to seek. But first let me briefly mention what has been done in conditions somewhat resembling those under consideration.

In "St. Bartholomew's Hospital Reports" for 1873, Mr. Thomas Smith gives an account of several cases of general peritonitis consequent on rupture of an ovarian cyst in which he operated successfully. Professor Kocher did a laparotomy three hours after the receipt of a pistol-shot wound of the stomach, closed it with sutures, and the patient recovered completely. Dr. Ball's successful case of a boy, who received a stab in the abdominal wall penetrating the stomach, in which, four hours after the injury, he did a laparotomy, and stitched the edges of the wound together, will be in the recollection of some members of the Section. In a paper read before the Medico-Chirurgical Society of London in

1885, Mr. Treves described a case of acute general purulent peritonitis due to the bursting of a pelvic abscess into the abdominal cavity, in which he opened the abdomen, flushed out the cavity, and put in a drainage-tube with the most satisfactory results. Several cases of successful laparotomies for general peritonitis secondary to perforation of the vermiform appendix have been recorded; and lastly, from Dr. J. W. Moore's recent work on the "Continued and Eruptive Fevers," I learn that of 19 attempted laparotomies for perforation in typhoid fever, 4 were successful. Handicapped as the operators in these latter cases must have been by extensive ulceration and inflammation of the intestine, by high fever—by, in fact, almost every condition that could militate against satisfactory union—such results were brilliant. Why have the cases of gastric perforation in the past not been equally successful? Chiefly because they have been done too late. They have been, in many cases, I fear, postponed hour by hour till the diagnosis was absolutely certain, and the patient almost moribund, lest it might be said, "The abdomen was opened and nothing found;" while in typhoid fever the onset of peritonitic symptoms was more or less expected, and no time was lost in deciding as to the advisableness of operating.

Two courses are open to us in treating cases of suspected perforation. We may reject operative interference, take our stand on the traditions hallowed by time and authority, and follow Heister, who, writing in 1739 on perforation of the bowel, could only advise that the patient be kept quiet, that he be urged to eat abstemiously, and to lie upon his belly, and that the rest be left to Divine Providence and the strength of the constitution; or, mindful of the recent great advances in abdominal surgery, of the very slight risk attending an exploratory laparotomy, of the fatal consequences of a perforation when left alone, we may make up our minds EARLY that the case calls for an abdominal section.

In 1881 Dr. Marion Sims, when addressing a medical society in America, having described the sudden death of an eminent physician in six hours from intestinal perforation, and recommended opening the abdomen and stitching up the wound, said—"Rest assured that the day will come, and it is not far off, when an accurate diagnosis in such cases, followed by prompt action, will save life that must otherwise quickly ebb away." If that day is hastened in any degree by any statements I have made in this paper—if I have persuaded any of my audience to

add acute perforative peritonitis to the generally-admitted four great surgical emergencies requiring immediate operative interference, my object in writing this paper is gained.

Mr. President and Gentlemen, I must apologise for the trial to which I have subjected you with these rambling thoughts and quotations, and express my gratitude to you for the patience with which you have listened to me. The matter and manner of the communication are far from what I would wish them to be. The only excuse I can offer is, that as I stood by the bedside of some of these patients, and saw the vital tide fast ebbing away, if one thought were impressed upon me more than another it was, "To save such cases one must open the abdomen and open it EARLY."

ART. IV.—*Notes on Epidemic Influenza*, 1891–92. By E. MACDOWEL COSGRAVE, M.D., F.R.C.P.I.; Physician to Whitworth Hospital, Drumcondra, and Cork-street Fever Hospital; Professor of Biology, Royal College of Surgeons.

THE epidemic of influenza in 1891–92 presented several peculiarities not observed in 1889–90 or 1890–91. The outbreak was more sudden and widespread, the catarrhal symptoms more wanting, and the cases ran an acuter course, whether ending in recovery or death.

Having met with a large number of cases which ran their course unmasked by complications, I have noted down some of the points which appeared of most interest, as a slight contribution to the history of the epidemic.

The cases occurred practically in the course of four months—November and December, 1891, and January and February, 1892—but the epidemic virulence lasted only some two months. Cases were sporadic in November, but a pandemic outburst occurred in the second week in December, the decline of intensity and return to sporadic cases taking place in the second week in February.

The lengthened period of time during which sporadic cases occurred harmonises with the opinion I have long held, that infection in influenza epidemics is confined to an area of epidemic influence, which includes the district in which the epidemic is active and a more or less extended zone outside it—that is to say, that although epidemic influenza spreads by contagion, the contagion is chiefly active in, or close to, the area of marked epidemic

influence, so that whilst an infected person going to a district well outside the zone of the epidemic is unlikely to establish the disease, an infected person going to a district close to that already affected is likely to prove a fresh centre of infection. The course of the epidemic across the Continent of Europe to England and to Ireland, so very slow compared with the transit of passengers and goods, is thus reconciled with the fact of its contagiousness—two characteristics which, at first sight, appear inconsistent.

This can be illustrated by two typical cases. The first case I saw in November. He was a boarder in a large school and came into Dublin to spend a half-holiday with some friends. As he complained of pains and shivered over the fire, I was asked to see him, and, recognising what he was suffering from, recommended that he should be kept in town. He did not return to school for two weeks. There was no outbreak in the school, and the disease was not communicated to anyone in the house he stayed in.

The second case, or rather series of cases, occurred in the second week in December, when the epidemic influence was fully developed, and were partly in the house where the former case had been nursed. A young lady was taken ill with influenza on the 9th; a friend who had helped to nurse the former case was spending the day with her and developed it on the 11th; a married sister nursed her and got it on the 15th; the parents of the young lady and a servant also took it, as did the husband of the married sister, and a visitor staying in the house. Eight people developed it in this series, the average period of incubation being two days.

These cases are only given as types. Amongst the cases observed before the second week in December there seemed no tendency to spread; once the epidemic was established, when a case occurred it appeared almost certain to spread. The pandemic area and the sporadic area may be compared to the shadow and penumbra.

The class affected by the epidemic is a point of great interest. Those who lived in overcrowded dwellings, and suffered from exposure and want of food, seemed less likely to be affected than the well-to-do classes; and those comfortably off, but living in small houses, seemed to be not as much affected as the richer classes.

Amongst the predisposing causes great fatigue seemed the most potent. I noticed this in my own case and in the case of other medical men, who attended numerous cases day after day with

apparent impunity, but suddenly developed symptoms of the disease from 12 to 24 hours after a specially fatiguing day's work.

There were two classes of cases running respectively a course of 3–4 days and 7–8 days. This is similar to what is seen in other fevers—the third week that typhus sometimes runs, the fourth and subsequent weeks' illness so frequent in enteric fever.

There were five chief prominent symptoms amongst my uncomplicated cases; sometimes they occurred singly, but generally two or more were present. Only the cases in which they were well marked are counted.

1. Bronchial catarrh. This was the most frequent, being prominent in 62 per cent. of my cases. Sometimes it was accompanied by distressing bronchorrhœa, sometimes by a medium or slight amount of viscid, tenacious mucus; in no case was it "dry."

2. Gastro-intestinal symptoms were prominent in 52 per cent. These generally developed very rapidly, vomiting and purging occurring within an hour of the first onset; vomiting was more frequent than diarrhœa. This symptom generally lasted for the 3-4 or 7–8 days, and for some time afterward there was a sensation when coughing of impending emesis.

3. Rheumatoid pains occurred in 50 per cent., generally in the back (all down the spine and extending bilaterally), sometimes only in the legs, in which case they were accompanied with great weakness of the knee and ankle.

4. Headache was a marked feature in 25 per cent.; it generally occurred in the gastric cases.

5. Urinary symptoms were prominent in 4 per cent.

In 19 per cent. of my cases no symptom except the fever was prominent; in 31 per cent. there were only fever and bronchial catarrh.

Slow recovery to strength was a marked feature of the disease.

None of the cases ended fatally; indeed, I was fortunate enough not to lose any of my complicated cases.

The treatment adopted may be briefly summarised:—

1. In cases where the increased temperature was the prominent symptom, diaphoretics were given. These generally gave relief, and, I believe, shortened the attack.

2. When the rheumatoid pains were severe, salicylate of sodium was given, antipyrin being added if the pain was excessive; when there was headache in addition these were combined with citrate of caffein. The relative proportions usually prescribed were:—

℞. Salicylate of sodium, 1 drachm;
Antipyrin, 20 grains;
Granular effervescing citrate of caffein, 1 ounce.

A fourth part to be taken three times during the day, and the fourth part on the following morning.

This always gave relief; sometimes the relief was almost immediate. If the pains returned a renewal of the mixture generally dispelled them finally.

3. In gastro-intestinal cases, hot milk and soda-water every three hours was relied on; if there was headache, citrate of caffein was given.

In no case did I consider it necessary to give alcoholic stimulants (although the onset of the disease was often marked by extreme weakness of the circulation), and I found the high temperature did not last so long, and that the fall below normal, so marked and sometimes so long continued when alcohol is administered, was escaped. There was consequently not the same depression of spirits during early convalescence, and a healthy appetite soon returned.

TREATMENT OF TUBERCULOSIS BY IODOFORM INUNCTIONS.

Dr. Lawrence F. Flick, after a year's experience, reports (*Medical News of Philadelphia*, 12th March, 1892):—"Iodoform will cure tuberculosis in the first stage, and it acts better when administered by inunctions than when given by the mouth. When the disease has advanced to the second or third stage iodoform may do good, but can no longer be depended upon as a curative agent. As I stated in my former paper, creasote should then be given together with iodoform, and given in large doses. If given diluted with hot water, as much as fifteen drops can be taken with comfort. It seems to me, indeed, that creasote is the drug to be relied upon in the second and third stages of the disease. I, however, use the iodoform inunctions in this stage for the reason that the tuberculous nodules in a given case do not all break down at the same time, and that whilst some nodules may be broken down, or have already broken down, there may be many that are still in the first stage. Along with specific treatment I always use tonics and forced nutrition. Much of the success that I ascribe to specific treatment may of course be due to the tonic and nutrient treatment, but I am bound to say that my results with iodoform inunctions and creasote together with tonic and nutrient treatment are much better than they were before I used the inunctions."

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PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Bacteriological Diagnosis: Tabular Aids for Use in Practical Work. By James Eisenberg, Ph.D., M.D. Translated and augumented, with the permission of the Author, from the Second German Edition, by Norval H. Pierce, M.D. Philadelphia and London: F. A. Davis Co. 1892. Pp. 184.

It is somewhat unfortunate that this translation of the second edition of Dr. Eisenberg's well-known tables should appear almost simultaneously with a third and greatly enlarged edition of the original. Still there can be no doubt that the translation will be welcome to those bacteriological workers who do not read German, a happily diminishing class.

The organisms described are 138 in number, and are divided into—I. Non-pathogenic bacteria; (*a*) liquefying gelatine; (*b*) not liquefying gelatine. II. Pathogenic bacteria; (*a*) cultivated outside the body; (*b*) not cultivated outside the body. III. Fungi. The descriptions are given in the form of tables under the following headings for bacteria:—Place found; form and arrangement; motility; growth on gelatine, agar, potatoes, blood-serum; temperature at which growth occurs; rapidity of growth; spore formation; aerobiosis; gas production; gelatine reaction; colour production; aniline reaction; pathogenesis.

In the case of the fungi the headings are different and as follows:—Place found; colour of growth; mycel arrangement; fructificative organs; growth; temperature; examination methods; pathogenesis.

At the head of many of the tables references are given to the most important papers on the organisms in question.

It will be seen that the arrangement is most convenient; and the great popularity enjoyed by the work will be readily understood. In fact it is a work which can scarcely be dispensed with by any practical bacteriologist. On the whole, the translator seems to have done his work fairly well. Some of his additions

are, however, not very fortunate—as, for example, the table in which the organism of scarlatina described by Klein is confounded with that described by Edington. There is not much room for style in translating such a work as this; but the very first sentence, describing the first organism, Bacillus prodigiosus, is in want of improvement. "Most probably *it* settles from the air on to the nourishing material; but, up to the present, *they* have not been demonstrated in the air."

In an appendix a very good description is given of the methods used in the cultivation and staining of micro-organisms. The volume concludes with an excellent index.

The Principles and Practice of Medicine, designed for the use of Practitioners and Students of Medicine. By WILLIAM OSLER, M.D., F.R.C.P., Professor of Medicine in the Johns Hopkins University; Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, M'Gill University, Montreal; Professor of Clinical Medicine in the University of Pennsylvania. Edinburgh and London: Young J. Pentland. 1892. Pp. 1,079.

ANYTHING from the pen of Prof. Osler necessarily raises great expectations in our mind, and it was with the feeling that there was something good in store for us that we undertook the perusal of his latest work. Having carefully examined the book, our verdict is that it is one of the best text-books of medicine that it has been our good fortune to meet.

This handsome and well-printed volume is no mere compilation of extracts taken from older works. On every page we find the author's personal experience and opinions, not dogmatically laid down, but clearly put forward in conjunction with other and opposing views. One of the circumstances that introduces into this book something of novelty and freshness for a British reader, is the fact that every subject is looked at from an American point of view; American authorities and statistics are quoted; American epidemics and health-resorts are mentioned; and one or two diseases are described which, as far as is known, have been observed only in America.

The general arrangement of this work is much the same as that found in other works on medicine. The chief novelty in arrangement is that diseases caused by animal parasites—psorosperms,

intestinal worms, parasitic insects, &c.—are included in a section by themselves. If this method of classification were fully carried out, there ought to be another class of diseases caused by vegetable parasites; for this, however, in the absence of any knowledge as to the exciting cause of the exanthemata and other specific fevers, the time has probably not yet come.

Many of the articles are really first-class. The work opens with an admirable account of typhoid fever, which occupies about 38 pages. We read with interest that the first physician who clearly laid down the difference between typhoid and typhus was Dr. Gerhard of Philadelphia. "His papers in the American Journal of the Medical Sciences," says Osler, "are undoubtedly the first in any language which give a full and satisfactory account of the clinical and anatomical distinctions which we now recognise." With regard to that much-debated subject, the treatment of typhoid, Osler seems to favour a rigid system of hydrotherapy, and bathes a patient every three hours if his temperature is above 102·5° F. Intestinal antiseptics he thinks useless, but harmless. Tuberculosis is treated as a whole, and instead of finding phthisis among diseases of the lungs, tubercular meningitis among nervous diseases, &c., we find one chapter describing every form of tubercular affection, and occupying 72 pages. This plan is a good one, and avoids the necessity of much repetition. While, however, typhoid, tuberculosis, pneumonia, and other diseases are described in a truly admirable manner, some affections do not in our opinion get anything like the attention they deserve. There is no disease more common or more important to the medical man than bronchitis; we find, however, that acute bronchitis occupies only two pages and a half, and chronic bronchitis two and three quarters. Again, chorea occupies 12 pages, while only one and a half are allotted to insular sclerosis, two to migraine, and two and a half to tetanus. Such inequalities are much to be regretted. It appears to us a very serious omission that there is no introduction to several of the sections on clinical pathology and modes of examination. For students the work is seriously diminished in value by the fact that there is no classification or explanation given of the morbid sounds and other phenomena in the lungs; we are plunged at once into râles and tubular breathing, and are not told how these phenomena are produced, or what is their clinical importance. Again, we think there should have been an introductory chapter to the section on diseases of the nervous system, in which there

might be an account of reflexes, spasm, incoordination, and other matters of clinical importance connected with the pathology of the nervous system. These omissions are the more inexplicable, as there is a chapter on the methods of clinical examination of the stomach: Ewald's Probefrühstuck, Tropæolin OO, &c. We regret, too, that there are not a few more illustrations in the book. Excluding temperature charts there are only five diagrams, all of which relate to the nervous system. Illustrations of urinary sediments, of the various system-degenerations in the spinal cord, and of similar objects, would not have greatly increased the size or cost of the work, and would have rendered it more useful. For our own part, we do not see why books on practice of medicine are not much more fully illustrated than they usually are. Works on surgery contain woodcuts of most of the diseases and morbid conditions that they refer to, but half a dozen diagrams are thought sufficient for many large and important works on medicine. These things ought not so to be.

As might be expected in Prof. Osler's work, the most recent views on pathology are mentioned: Laveran's plasmodium malariæ, Eberth's bacillus of typhoid, Löffler's diphtheria bacillus are sufficiently mentioned. Rare and recently described diseases—such as Weil's disease, Malta fever, and Thomsen's disease—are not overlooked. The index of contents deserves the greatest praise; it is unusually full and accurate.

If we have called attention to what seem to us to be defects in this work, we have done so in no hostile spirit. On the contrary, we have formed an exceedingly high opinion of its merits and excellences, and consider it one of the best works on the practice of medicine that has appeared in the English language.

Royal University of Ireland. The Calendar for the Year 1892. Dublin: Alex. Thom & Co. 1892. 8vo. Pp. 390.

Royal University of Ireland. Examination Papers, 1891. Dublin: Alex. Thom & Co. London: Longmans, Green & Co. 1892. 8vo. Pp. 445 and 113.

THESE useful guides to the Students of the Royal University of Ireland have been published in the usual first-class manner.

The only important change in the subjects of Examination in the Faculty of Medicine for 1893 is the transference of Pharmacology (Materia Medica) from the second to the third Professional

Examination. Notice also is given that, in order to carry out the regulations of the General Medical Council under the Five Years' Scheme, the prescribed courses will be amended and "will be published during the current year" (page 173).

The Examination Papers set in 1891 are, as usual, published as a supplement to the University Calendar in a separate volume. From the numbering of the pages, the Examinations in the Arts Faculty appear to be printed separately from those in the Professional Faculties of Engineering, Law, Medicine and Music. This is, in our opinion, a good plan.

We notice with some surprise that in both volumes a very significant prominence is given to a long advertisement of the "Catholic University Medical School." One would suppose that this institution was the recognised School of the Royal University.

A Treatise on the Ligation of the Great Arteries in Continuity, with Observation on the Nature, Progress, and Treatment of Aneurism. By CHARLES A. BALLANCE, M.S., &c., and WALTER EDMUNDS, M.C., &c. Illustrated by 10 plates and 232 figures. London and New York: Macmillan & Co. 1891. Royal 8vo. Pp. 568.

IN this work, which is produced in the most luxurious style as regards paper, type, illustrations, and binding, making it a pleasure to read, we find embodied the results of the researches in which the authors have been engaged over a number of years, and to which partial publicity had already been given in the *Medico-Chirurgical Transactions*, and in the Erasmus Wilson Lectures in 1889. Here, however, the whole subject of the ligature of vessels, embracing the pathology of hæmorrhage and the process of repair, is fully dealt with, and the work as a whole constitutes the most complete monograph which exists on the subject in any language.

A very interesting chapter deals with the "Nature of Arteries," in which their minute structure is carefully examined, and the relative thickness of their tunics accurately measured and tabulated, one of the most important facts established being the extreme thinness of the walls of a healthy artery in its natural state. "Physiological Occlusion" is fully treated of, the obliteration of the ductus arteriosus being taken as a type; followed by an

exhaustive review of the subject from a pathological standpoint. The chapters on the "Conduct and Fate of the Corpuscles" and the "Conduct and Fate of the Clot" are enriched with the details of many experiments, and illustrated with some beautiful plates. The use of the corpuscles and fibrin of the clot is shown to be a threefold one—they act as a barrier to the current of the blood; they form a ladder, or network, by which the repairing cells gain entrance; and when they die they serve as nutriment for the plasma cells derived from the intima of the vessel.

In the process of repair the corpuscular elements take no part. "The scar-tissue, which occludes the artery, is formed, not from the leucocytes of the blood, but from the plasma-cells of the arterial wall." And to accomplish this occlusion rupture of the coats of the vessel is not necessary. As a result of their study of physiological occlusion the authors sum up their views as follows:—"In conclusion, it may be pointed out to the followers of J. F. D. Jones, that Nature does not think it necessary, when occluding the ductus, to rupture the two inner coats in order to produce sufficient intimal growth; and to the followers of Celsus and Abernethy, that she does not divide the artery to reduce the longitudinal tension—on the contrary, she does not hesitate greatly to increase it; nevertheless, in her hands, failure to occlude very rarely occurs, hemorrhage (*sic*) never" (p. 78). Most interesting are the experiments in the Ziegler chambers, and the light they throw on the process of clot-formation. The formation of the fibrin trabeculæ radiating from a fibrin node, presumably the seat of disintegration of a blood-platelet, and the subsequent inroad of the plasma cells along these guide-lines were clearly seen, and identical processes afterwards observed in arteries at various periods after ligature, and in this connection we think the authors have made a good case for their opinion "that the primary cellular invasion, the solid cylinders of cells, and, later, the capillaries, all occupy the place once held by the bands of fibrin which stretch from node to node" (p. 173). But we must pass over many other interesting physiological questions which are fully entered into and discussed in these chapters.

Most interesting, also, are those portions dealing with the changes which the coats of the vessel undergo, and also the fate of aseptic ligatures. It will astonish many to learn that the only ligatures that remain permanently encapsuled and unabsorbed are those of gold and of platinum. "Wires of silver, lead, iron, and

probably other metals, become sooner or later completely absorbed." Much space is devoted to this question of resistance to absorption in the choice of a ligature, the experiments mainly being made with kangaroo tendon and chromic catgut, and with ligatures made from the peritoneum of the ox. Silkworm gut is the most resistant, but is inconvenient in use; next come peritoneal ligature and kangaroo tendon; but chromic catgut, which resists absorption for a month or more, the authors consider sufficient for all purposes if the wound is kept aseptic.

But the two main questions which the authors have set themselves to establish on a definite basis are—the question of rupture of the inner and middle coats, and the mode of occlusion of the artery by the ligature. We cannot help agreeing with the writers, and accepting their case as proven, that rupture of the coats is not only a needless, but a dangerous and unphilosophic procedure; but we cannot here even summarise the mass of evidence they have brought together in support of their contention. And readers must find in the book itself the description of the "stay-knot" which the authors have devised for ligature in continuity. One important point to be remembered is that when the coats are not injured, a larger surface of the arterial wall must be put in apposition by the ligature, and this is accomplished by the use of several strands of ligature applied in the way recommended. As regards the occurrence of hæmorrhage after ligation, we may quote the following sentence:—"When the coats are ruptured hemorrhage will happen most often with those arteries in which the outer coat is thinnest, the collateral branches most numerous, and the minimum of clot deposited; that in those cases the full force of the blood-current breaks upon and rends the outer tunic, where it alone confines the blood within its natural channel; further, by antiseptics alone the great arteries of the body cannot be ligated as far as hemorrhage is concerned with absolute safety, but this result may be expected when with asepsis is combined the employment of a suitable ligature, so applied as to occlude the artery without damaging its wall." It will be noticed that in this passage, as throughout the book, the authors adopt the barbarism "hemorrhage," and elsewhere we have noticed "leucocythemia;" but why do they not in consistency write "pyemia," which frequently occurs in its *proper* form? Again, a little more careful revision would have avoided such solecisms as "is" for "are" on two occasions (pp. 225, 236); "equal for" as a synonym of

"sufficient;" "and which," on several occasions; and such a sentence as the following—"The processes of healing and inflammation are for all practical purposes identical in the higher animals which we have employed, with that which is observed following upon the wounds of men." Again, "Lancereux," "Kocker," "Volckmann," are evidences of want of care; but these are minor blemishes which a future edition will rectify, and we only regret their occurrence in a work which is in every other respect admirable—in the completeness of its experimental work, in the closeness and clearness of its reasoning, forming as it does a *chef d'œuvre* of British surgery.

It should be added that the book possesses an exhaustive bibliography and an admirable index—indispensable aids to its study.

Tuberculosis and its Successful Treatment. By Robert Bell, M.D., F.F.P.S.G., &c.; Senior Physician to the Glasgow Hospital for Diseases Peculiar to Women, &c., &c. Glasgow: D. Bryce & Son. 1892. Pp. 60.

The treatment which Dr. Bell advocates is that by means of calcium chloride. He gives 15–20 grains three times daily, and narrates several cases illustrating the successes he has had.

There is, as well as this, a good deal of writing about Phagocytes, Koch, and some other subjects.

The importance of the book is not very great. Dr. Bell's remarks would have been more suitably confined within the limits of an article in one of the medical journals.

Differentiation in Rheumatic Diseases (*so-called*). By Hugh Lane, L.R.C.P., M.R.C.S.; Surgeon to the Royal Mineral Water Hospital, Bath; Hon. Medical Officer to the Royal United Hospital, Bath. London: J. and A. Churchill. 1892. Second Edition. 8vo. Pp. 121.

In the number of this Journal for April 1891, we favourably reviewed the first edition of this monograph, which consisted of a modest pamphlet running only to 27 pages. The present edition is of a more ambitious kind—running to nearly five times the length of its predecessor, dealing in considerable detail with the treatment of the troublesome group of maladies

included under the generic term "Rheumatic," and containing a number of very fair though necessarily small illustrative plates.

The third chapter is on Gout. While somewhat sketchy, it contains a good deal of information and valuable advice on treatment. We do not like the expression "anti-goutic remedies," which occurs at page 93. Mr. Lane considers that the "general idea that an acute attack of gout 'does good' and clears the system" "*is a mistake*"—and we agree in this opinion.

Chapter IV. gives advice as to the mineral thermal water treatment as carried out at Bath. In Chapter V. this treatment is shown to be in no way injurious in heart cases.

We like Mr. Lane's book and recommend it.

Essays on Acromegaly. By DR. PIERRE MARIE and DR. SOUZA-LEITE; with Bibliography and Appendix of Cases by other Authors. London: The New Sydenham Society. 1891. Pp. 182.

THE thanks of the profession are due to the New Sydenham Society for their timely publication of these essays. Acromegaly has only been recognised as a distinct entity for some six or seven years, and although during that time cases have been reported by a good many physicians, still the literature of the disease has been up to the present, as far as English-speaking people are concerned, chiefly confined to the various journals, most of the text-books on medicine either devoting but little space to this malady, or else passing it over altogether.

This want of a complete and accurate account of this curious disease is now removed. The volume before us contains nearly all that is known on the subject. It comprises the original essay by Dr P. Marie, published in 1885. He based his description on two cases which he had himself most carefully observed, and on five others which had been recorded by other physicians who did not fully appreciate their nature.

The second and larger part of the book consists of a systematic thesis on acromegaly by Souza-Leite, a friend and pupil of Marie. This essay is really the classical description of the disease. Souza-Leite discusses, as fully as it is possible to do, the ætiology, pathology, and symptoms of the malady, and devotes particular attention to its diagnosis—a most valuable feature in the case of so unfamiliar a disease. He then gives accounts of 36 cases from the notes of several observers.

At the end of the volume the translator has collected the accounts of 10 additional cases, some of which were only published in July, 1891.

The value of the book is much increased by a large number of woodcuts and diagrams lent by Dr. Marie, which show the leading features of the disease. Some of these are rather rough, but on the whole they are very instructive.

The translation has been done by P. S. Hutchinson, M.R.C.S., who has done his part of the work in an admirable manner. Indeed, for the entire book we have nothing but praise.

The Water-Cure in the Bedroom; or, Hydropathy at Home. By G. H. Doudney, M.B., M.R.C.S. Eng.; Late Resident Medical Officer to the Seamen's Infirmary, Ramsgate. Bristol: J. Wright & Co. Pp. 46.

This little book consists of an introduction stating the general principles and rules of the water treatment, and of a series of articles on the treatment of a number of common ailments by means of hydropathy. The ailments selected belong to that class of chronic ailments that are exceedingly distressing without being dangerous to life, and are, in consequence, treated at home by various empirical and household measures—such ailments as constipation, headaches, chronic rheumatism, indigestion, &c. The author believes that water treatment will be found of much use, and has written this book for the general public in the hope that they may be induced to give it a trial, and not to have constant recourse to the "domestic drugging which goes on so much now-a-days." The directions given are admirably clear; any one can carry them out without fear of making a mistake. We welcome the book, and believe that it will be found useful by many.

The Diseases of the Nervous System. By J. A. Ormerod, M.A., M.D. London: Churchill. 1892. Pp. 328.

This little work is one of Churchill's Student's Guide Series, but is in point of merit far above the general level of such works. It is indeed a most excellent guide to anyone wishing for an introduction to the study of the important and difficult class of disease with which it deals. The author modestly says the work is offered to the student as no substitute for the larger and more elaborate

treatises on the same subject, "but only as an introduction to his work and outline map of territory to be acquired; and should it thus prove to him, perhaps by its very smallness, an encouragement and aid, then it will have served its end." We shall feel greatly surprised if it does not become a very popular guide to students of all ages, for we know very few works in which so much accurate information, clearly given, is to be found compressed into so few pages. It is a work we would most highly recommend to all our readers.

The Dietetic Value of Bread. By JOHN GOODFELLOW, F.R.M.S. London: Macmillan & Co. 1892. Pp. 328.

THIS book, which is one of Macmillan's excellent manuals for students, is, we are told, mainly a reprint of papers already published in the *Baker's Record*. "The object of the work is twofold: First, to lay before the general public an account of the various kinds of bread, by which their merits may be judged; and secondly, to afford technical information to students and others on the important subject of the true value of bread as a food."

In the first chapter it is shown by statistical tables "that to a considerable number of children bread is practically the only food supplied, while to the remainder it forms the chief article of diet." The importance of the inquiry is thus shown. The remaining nine chapters of the first section deal with the general metabolism of the body, classification of foods and food-stuffs, digestion, absorption, and the general principles of diet.

The second section, comprising nine chapters, deals with white bread. In this part of the book there is much of interest, and throughout evidence of wide research and original work. We find notice of a remarkable unstable compound formed during baking, by the combination of gluten, casein, and gluten-fibrin with some of the disintegrated starch. It has been found that when this is acted on by the gastric juice the starch is set free and the glutens are much more easily digested than if they had been heated alone. When the compound is acted on by diastase, the starch is rapidly converted into sugar, the glutens being set free.

Interesting tables are given to show that, for the money it costs, white bread affords more nutritive matter than any other kind of food. At the same time it is pointed out that in bread the pro-

teids are deficient in proportion to the carbohydrates, and since the poorer classes depend largely on bread as their staple food, it is of great importance that the proteids should be raised in bread, so as to make it more nearly a perfect diet. Furthermore, it is shown that bread is deficient in lime, and therefore, particularly in the case of children, must be supplemented by milk or other substance rich in lime and phosphoric acid.

The results of the experiments of most physiologists have shown that white bread is very perfectly digested. The author, in experiments by artificial digestion, found that the waste in fine white bread never exceeded 3·8 per cent. In experiments on himself the waste was 4·2 per cent.; coarser bread averaged 4·9 per cent.: white rye bread, 10·9 per cent.

Still, from a consideration of the chemical composition of white bread, it is concluded that "it is entirely unsuited for infants, and even when supplemented by milk the surplus of carbohydrates and the deficiency of fat cannot be entirely obviated." These defects are strikingly shown when bread is compared with milk, the natural food of infants.

It is highly satisfactory to learn that the author can state, as the result of an exhaustive series of examinations of various foods, that "it is now certain that the bread supplied to the people of England is practically pure."

The third section, of seven chapters, is on wholemeal bread. "The author is not opposed to the use of wholemeal bread, *provided the meal is properly prepared*," but "he has come to the conclusion that the wholemeal bread made from *ordinary* wholemeal is not always a desirable food." It is not a perfect food, since it yields too little proteid, and fat, and mineral matter, but a surplus of carbohydrates; the bran is not usually reduced to a sufficiently fine state of division; the digestibility is inferior to white bread; and the bulk is too great for the amount of nutriment yielded. Furthermore, it is not only indigestible itself, but it leads, if taken in considerable quantity, to an increase of waste in the digestion of other foods. These objections to *ordinary* wholemeal bread apply in much less degree to *fine* wholemeal bread, which is fairly well digested, and unirritating to the digestive organs. As it yields more alkaline phosphates and has a higher proteid ratio than white bread, it is concluded that it may be of special value to those who are constipated, who are inclined to become corpulent, to nursing and pregnant women, to children above the age

of ten months, to those who have a tendency to decay of the teeth (!), and to children inclined to rickets.

The fourth section, of ten chapters, treats of special breads. In these chapters much valuable and practical information will be found, but we can notice only a few points. The author believes that triticumina bread is as near a perfect food as wholemeal bread can be, and that "it deserves the universal commendation which has been accorded to it by the medical and analytical world." Smith's patent germ bread is stated to be "far superior to fine white bread or ordinary wholemeal bread as a food." Bonthron's gluten bread is "practically as free from starch and sugar as is possible," and "a valuable food for all those who are troubled with diabetes, and is by far the best preparation of its kind that has ever been produced."

The two concluding short sections deal with the diseases and abnormal conditions of bread, and with the medicinal properties of bread.

In conclusion, we would strongly recommend this book to our readers. Every physician will find in it much useful matter and many valuable hints, which will guide him in the dieting of his patients—a matter which often presents far greater difficulty than the prescription of drugs.

An Index of Diseases and their Treatment. By THOMAS HAWKES TANNER, M.D., F.L.S. Fourth Edition. Revised by PERCY BOULTON, M.D., M.R.C.P., London; Senior Physician to the Samaritan Free Hospital, &c. London: Henry Renshaw. 1891. Pp. 512.

THIS "Index" has been found useful by many medical men in the past, and we doubt not that in the future this edition will prove as popular as its predecessors. It has been revised and brought up to date, old-fashioned synonyms and obsolete remedies having been expunged, and new and important matter introduced.

While we fully recognise that this book has become popular among medical men, and that a work now in its fourth edition is in a position to despise all hostile criticism, nevertheless we must say that we feel considerable doubts as to its use. It consists of an alphabetical list of diseases. Under each heading we find a brief list of symptoms, and a list of drugs or of references to formulas for treatment. There are hardly any indications mentioned as to

when the different remedies are advisable or the reverse. We fear that the tendency engendered by such an "Index" as this is to pick out a drug or prescription mentioned in the article on the disease in question, whatever it may be, and to treat or attempt to treat the disease and not the individual case. We think that if an index of treatment is written, it should be large enough to discuss at some length the reasons for the various lines of treatment mentioned, and we believe that mere lists of drugs with little else are to be avoided.

Die Behandlung der Tuberculose mit Tuberkulocidin. Vorläufige Mittheilung von Professor D. E. Klebs in Zürich. Zweite Auflage. Hamburg and Leipzg: L. Voss. 1892. Pp. 39.

In this pamphlet Professor Klebs details the results which he has obtained in the treatment of tuberculosis in animals and in men, by injections of tuberculocidin, a purified tuberculin from which the injurious matters are removed, while the curative albumoses remain. The results are said to be of the most encouraging description, and if they are confirmed by other observers will, no doubt, have an important effect on the treatment of tubercular affections.

Full details are given of the mode of using the drug, which is now an article of commerce, and can be had at six marks the cubic centimetre from the Höchster Farbwerken in Höchst a. M.

The Essentials of Histology, Descriptive and Practical, for the Use of Students. By E. A. Schäfer, F.R.S. Third Edition. London: Longmans, Green, & Co. 1892. Pp. 302.

The appearance of a new edition of Professor Schäfer's excellent Essentials of Histology will be welcomed by all students of anatomy. The present issue has been extensively revised, and many important alterations and additions have been made. Among the latter the most noteworthy are the results of the new methods which have been introduced by Golgi and his followers for the examination of the nerve-centres. These new researches are perhaps rather too briefly described, but are magnificently illustrated by drawings copied from the works of Retzius and Ramon y Cajal, as well as by original diagrams. The author has also incorporated in the work the results of his own recent

valuable researches in the structure of striped muscular tissue. The text is illustrated by 325 drawings, all of great beauty; and the abundant illustrations have made it possible to curtail the text within much narrower limits than is usual in a book of such wide scope. The way in which the work is brought out, and its low price, leave nothing to desire. On the whole, it is a work which can scarcely be too highly praised.

The New Sydenham Society's Lexicon of Medicine and the Allied Sciences. (Based on Mayne's Lexicon.) By HENRY POWER, M.B., and LEONARD W. SEDGWICK, M.D. Part 17. Mas–Mit. London: 1890.

AT its present rate of production the younger subscribers to the New Sydenham Society will be old men before their ponderous Lexicon is completed. This 17th fasciculus carries us only into letter M, and little remains to say beyond chronicling each part as it comes to light. We learn from this part that *Meybom* and not *Meibom* is the correct orthography of the German physician whose name is perpetuated in relation to the follicles and cysts of the eyelids. The printing is very carefully done; we noticed but one misprint—viz., Méhn, Camille, a French pharmaceutist, which should read Méhu.

Materia Medica and Therapeutics. Vol. I. By J. V. SHOEMAKER, M.D., and J. AULDE, M.D. 1889. Vol. II. By J. V. SHOEMAKER, M.D. 1891. Philadelphia and London: F. A. Davis.

WE cannot but admire Dr. Shoemaker's ceaseless energy and capacity for work. He seems never to tire writing, speaking, and travelling, and he is a well-known figure at medical gatherings outside his own country.

He now presents us with a new work upon Materia Medica and Therapeutics. The second volume is entirely from his pen, while in the preparation of the first volume, which was published two years previously, he had the assistance of Dr. Aulde.

In compiling this work Dr. Shoemaker was fired with the laudable ambition to "cut loose from the traditional heresies that have been handed down from time immemorial," without at the same time condemning as "obsolete empirical methods which have shown their value in times gone by!" and he hopes

that his work will receive from the medical profession a welcome in keeping with the care that has been given to its preparation.

We quite recognise that the book has merits. It is brightly written and well up to date. Yet we do not think that it at all comes up to the author's ideal, or exhibits distinctive novelty, and it is certainly not free from many errors and inaccuracies which are open to criticism. The first volume is chiefly devoted to a consideration of remedial agents other than drugs (oxygen, peroxide of hydrogen, and nitrous oxide are strangely included), and to matters of general scope—such as pharmaceutical processes, dosage, and the principles of prescribing.

The second volume, after a short introduction, deals exclusively with drugs, and takes them up in alphabetical order. Special attention is paid to the therapeutical applications, and this is, in fact, one of the best features of the work.

Leçons de Thérapeutique. Par G. Hayem. 3me Série. Les Médications. Paris: G. Masson. 1891. Pp. 450.

M. Hayem's work, when completed, will occupy four volumes. The one under notice is the third of the series, and deals chiefly with neurotic remedies and with drugs acting upon the cardiac mechanism.

The book is pleasantly written, and without going profoundly into the subject, gives an excellent *résumé* of pharmacology and therapeutics. Several chapters are devoted to the treatment of failing compensation of the heart, for which condition the author uses the uncouth term *kinésitaraxie*.

Lectures on Children's Diseases. By Dr. E. Henoch. Vol. II. Translated from the fourth edition (1889) by J. Thomson. M.B., F.R.C.P., Edin. London: The New Sydenham Society. 1889.

We had occasion some time since to speak favourably of Vol. I. of this work, and especially of its essentially clinical and practical character. The same characteristics are observable throughout this volume, and it is needless to do more than indicate the chief subjects of which it treats. Nearly one-third of the book is devoted to diseases of the digestive organs, which are carefully described. The section upon diseases of the urinary organs is

mainly occupied by an account of nephritis. Under the heading of Infectious Diseases we have scarlet fever, measles, chicken pox, diphtheria, and typhoid fever; and under Constitutional Diseases are ranked rheumatism, anæmia, purpura, scrofula, and rickets. The concluding chapter deals with some diseases of the skin. It makes no pretensions to completeness, and treats only of those affections which are either much more common in children, or present with them certain peculiarities. The entire work is an extremely valuable contribution to medical literature, and is deserving of all praise.

The Lord of Humanity, or the Testimony of Human Consciousness. With Supplement on the Mystery of Suffering. By FREDERICK JAMES GANT, F.R.C.S. Second Edition. London: Longmans, Green, & Co. 1891. Pp. 163.

PRACTICALLY a reprint of the first edition. Commencing with the three dominant passions—Fear, Cupidity, and Love—and the classes of mankind under the rule of each, the author deals with man as an evolutionary being, his conception of God, and the Revelation of Christ. In the midst of many thoughts and surmises there is the one leading idea that God is Love, and that the keynote to Religion must be found in this. The book is of deep interest, but occasionally the author allows his subject to carry him away, as on page 79, where the following paragraph occurs. We give it in full, to show the line of thought to which the latter part owes its origin:—

"The *Religion* of the Atonement is *Self*-sacrifice. The Law of all Living Beings is Self-sacrifice, unconsciously or consciously. The hen-bird brooding over her young, starves herself rather than forsake them; or she fights to the death for their preservation, losing her own life that they may live. And in the 'struggle for life,' the weaker are sacrificed to the 'survival of the fittest.' All such loss of Self, in a thousand forms, is only the unconscious fulfilment of the law of self-sacrifice for the good of others."

The first part is undeniably true; the parental instinct affords some of the most striking—indeed they may be called marvellous, examples of self-sacrifice; but the struggle for existence—the survival of the fittest—is very different. These afford the most hideous picture of the ruthless trampling down of the weak by the

strong. Sacrifice of others to advance self are often met with, but self-sacrifice never.

It is hard to imagine anyone reading "The Lord of Humanity" without having his mind stirred up to face some of the problems connected with a future life.

Pye's Surgical Handicraft. With 235 Illustrations on Wood. Third Edition. Revised and Edited by T. H. R. CROWLE, F.R.C.S., &c., &c. Bristol: John Wright & Co. 1891. 8vo. Pp. 570.

THIS well-known manual for house surgeons and surgical dressers appears in its third edition under the careful editorship of Mr. Crowle, Surgical Registrar to St. Mary's Hospital. The leading features of the book have undergone but little change, the editor's endeavour, as explained in the Preface, having been "to make the book still more useful than it has hitherto proved itself, and at the same time to depart in no degree from what, as far as I can judge, would have been the wishes of the author respecting it." This intention has, so far as we can judge from the perusal of various sections, been faithfully carried out. Though not approving of all the opinions expressed—*e.g.*, the treatment of fractured patella by Malgaigne's hooks—still, most of these questions are of such a nature that the task of decision will not rest upon those for whom the work is specially prepared. We cordially wish the book every success under its new pilot. The paper and type are good, but the binding hardly sufficiently strong for the size, and probable treatment, of the volume.

Abdominal Surgery. By J. GREIG SMITH, M.A., F.R.S.E.: Surgeon to the Bristol Royal Infirmary, &c., &c. Fourth Edition. Eighty-two Illustrations. London: J. & A. Churchill. Bristol: J. W. Arrowsmith. 8vo. Pp. 806.

WHEN a book, which is a treatise of eight hundred pages on a special branch of surgery, has reached a fourth edition in an exceedingly short space of time, it is safe to conclude that it has met a recognised want, or that, recognising a want, it has met it in a way that has proved satisfactory to those professing surgery. In any case, before the coveted symbols, "*Ed. 4ta.*," criticism stands disarmed and gives place to congratulation, which is at

all times a more pleasing duty, and most pleasing of all when the object of commendation is in every way worthy and deserving of all we can say of approval or flattery. No one who has ever appealed to Mr. Greig Smith's book has, we feel sure, appealed in vain; and in this volume, revised to date, "several novel methods of operating have been introduced." It is a certain indication of the wide appreciation of Mr. Smith's work to know that translations are being made of this Edition into French, Italian, and German. With only one revision do we quarrel—Mr. Smith has adopted Dr. Harris's hideous term, "cœliotomy," as a synonym of "abdominal section."

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. HALE WHITE, M.D., F.R.C.P. London: J. & A. Churchill. 1892. Pp. 614.

A COMPACT little volume, containing a marvellous amount of information so arranged as to be easily found. Pharmacy occupies 24 pages; Pharmacology, 80 pages; the bulk of the book being occupied by Materia Medica. The non-official remedies are kept separate from those in the B. P. Under the heading of each drug, in addition to the usual information about source, preparations, &c., there are hints as to what substances they may be mistaken for, and a differential diagnosis is given.

The author seems to have held the balance fairly; unimportant substances being treated shortly, whilst able and well-condensed therapeutic essays are given on valuable drugs. There are tables of incompatibles and substances which precipitate each other, the usual table of Latin phrases, and a capital table of natural orders, like the well-known one in "Squire's Companion," but keeping the drugs in each order together.

The Rheumatic Diseases (so-called) with Original Suggestions for more Clearly Defining Them. By H. LANE, L.R.C.P., Edin., and C. T. GRIFFITHS, L.R.C.P., Lond. London: J. and A. Churchill. 1890.

THE authors have had the advantage of an extensive experience among the patients who flock to the mineral waters of Bath, and the present book is the outcome of their personal clinical research. The best feature of the book consists in the illustra-

tions, which are 11 in number. They represent, in an effective way, the lesions seen in rheumatoid arthritis, chronic rheumatism and gout. Figs. 4 and 4[a] illustrate the occurrence of pigmentation of the skin in connection with rheumatoid arthritis. We cannot speak so highly of the text. It is written in a somewhat inflated and pompous style, and it is not always easy to decipher the authors' meaning.

In the treatment of sciatica stress is laid upon the administration of ammonium chloride in large doses—20–30 grs.—three times a day, and it is asserted to be the only drug which appears to exert anything like a specific action upon the pain.

Tables for the Diagnosis and Treatment of Syphilis. By J. K. Barton, M.D., Senior Surgeon to the Adelaide Hospital, and Past President, R.C.S.I. Third Edition. Dublin: Fannin & Co. 1892. Pp. 27.

This new edition of these well-known tables contains the treatment of syphilis. This addition was made at the request of a number of the author's student-friends, who had found the former editions very useful.

Mr. Barton's treatment consists of inunction of mercurial ointment combined with the use of quinine for the earlier stages of the disease, while in the later stages he generally gives the green iodide. It is a pity that the proof-sheets of this little book were not more carefully corrected, as a large number of typographical mistakes appear in it. We find pupules (for papules), esophagus, sets-pus (sero-pus), mediastinae, dactylis for dactylitis, ottitis, and pericianium. We also read of a condylomata.

The chief feature in these tables is the way in which Mr. Barton has emphasised the more important points, by means of large print, so that they catch the eye at once—a circumstance which renders the book easy for a student to make up. We expect that this edition will enjoy even more popularity than its predecessors have done.

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PART III.

SPECIAL REPORTS.

REPORT ON PUBLIC HEALTH.

By Sir Charles A. Cameron, Ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health, and of the Irish Medical Association: Examiner in Sanitary Science, Royal University; Member of Army Sanitary Committee; D.P.H. Camb.; Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.

ON SOME POINTS IN THE ÆTIOLOGY OF TYPHOID FEVER.[a]

The mortal statistics, published during the last twenty years or so, show that with rare exceptions the zymotic death-roll is steadily declining in all parts of these countries. In Dublin, for example, the deaths from the principal zymotic diseases were, in the period 1876–80, in the ratio of 5·29 per 1,000 persons living. In the next quinquennial period the rate declined to 3·06: in the five years ended in 1890 the rate further declined to 2·86; and in 1891 it was only 1·7—which was lower than the mean rate in the twenty-eight large English towns. The mean zymotic death-rate in twenty largest English towns in the period 1882–1886 was 3·14· but in the five years 1887–1891 it was reduced to 2·78 per 1,000 persons living.

Whilst the zymotic death-rate has declined in a very marked manner in Dublin, and in British and Irish towns generally, there has not been a corresponding reduction in the mortality ascribed to typhoid fever. On the contrary, in some towns it has remained stationary, or even shown a tendency to increase. In Birmingham, for example, it has not declined, and in Belfast and Dublin it has increased. Through the kindness of the medical officers of health of forty-nine large towns or districts, I have been able to ascertain the mortality caused by typhoid fever in those places, and I have arranged them in the following table:—

[a] The Cavendish Lecture, delivered before the West London Medico-Chirurgical Society, 2nd June, 1892, by Sir C. A. Cameron.

Deaths from Typhoid Fever per 10,000 *Persons living in the following Places.*

Place	Year					Average for 5 years
	1887	1888	1889	1890	1891	
Woolwich	0·73	0·49	0·98	0·73	0·73	·730
Kensington	0·60	1·20	1·10	0·90	1·40	1·040
Paddington	0·99	1·30	1·40	0·80	1·40	1·180
Islington	1·03	1·61	1·62	0·92	0·87	1·210
Croydon	0·85	1·35	0·91	1·09	1·06	1·250
Bristol	1·00	1·20	1·70	1·40	1·00	1·260
Brighton	1·60	1·30	1·50	1·10	1·10	1·320
Camberwell	1·74	1·32	1·15	1·106	—*	1·329
Whitechapel	0·80	1·70	1·20	2·10	·90	1·340
Cork	2·25	1·25	·50	·87	1·87	1·348
Bradford	1·43	0·82	2·04	1·29	1·24	1·364
Chelsea	2·89	·63	1·37	1·15	·82	1·372
Edinburgh	1·46	1·02	1·19	1·62	1·60	1·378
Wolverhampton	1·75	1·36	1·10	1·09	1·81	1·422
Hackney	2·00	1·15	1·25	1·30	1·63	1·466
Pancras	1·19	2·43	1·24	1·36	1·15	1·474
Newcastle	2·70	1·40	1·00	1·30	1·00	1·480
Huddersfield	1·00	1·30	1·10	2·50	1·60	1·500
Dundee	2·10	1·30	1·02	1·40	1·80	1·524
Birmingham	1·90	1·50	1·00	1·40	1·80	1·520
South Shields	1·15	1·39	1·08	2·35	1·89	1·572
Shoreditch	2·02	1·62	1·37	1·27	1·63	1·582
Southwark	2·00	Nil	Nil	2·00	4·00	1·600
Oldtown, Mile End	1·50	1·40	1·25	1·96	1·96	1·614
Holborn	1·73	1·17	1·17	2·05	2·15	1·645
Hull	1·40	1·60	2·10	1·60	1·80	1·700
Southampton	1·23	1·07	0·77	0·92	1·37	1·720
Oldham	2·02	1·90	1·56	1·15	2·04	1·734
Derby	2·10	2·90	1·10	1·80	1·10	1·800
Glasgow	1·90	1·10	2·00	1·90	2·20	1·820
Leicester	1·89	2·24	1·54	1·68	2·03	1·876
Gateshead	2·00	1·80	1·00	5·00	1·30	1·884
Halifax	1·51	1·12	2·71	1·58	2·65	1·914
Norwich	1·83	1·56	1·72	3·32	1·40	1·970
Londonderry	2·33	0·66	2·00	4·30	1·00	2·058
Swansea	2·90	1·90	2·00	2·00	2·40	2·240
Cardiff	1·62	3·31	2·58	1·96	1·84	2·262
Liverpool	2·40	2·40	3·20	1·90	1·80	2·340
West Bromwich	1·44	1·26	3·06	2·52	3·96	2·448
Bolton	2·75	2·73	2·70	1·89	2·58	2·530
Portsmouth	3·61	1·80	2·08	3·19	2·06	2·548
Birkenhead	2·25	3·26	3·53	3·00	—†	3·010
Plymouth	3·20	3·00	3·80	3·90	1·30	3·040
York	3·71	1·85	3·28	3·14	3·42	3·080
Merthyr Tydvil	4·50	1·60	4·30	2·60	2·20	3·100
Preston	5·50	2·60	5·00	2·30	2·90	3·660
Middleborough	2·30	1·70	2·70	8·20	7·60	4·500
Salford	4·30	4·70	5·80	4·20	3·80	4·560
Dublin	3·80	4·70	6·00	5·30	5·40	5·040
St. Helen's	5·10	3·10	11·20	3·40	3·30	5·220
Belfast	3·40	3·10	7·40	7·00	5·90	5·360
Mean rate in 50 towns	2·18	1·80	2·28	2·296	2·07	1·124

* Not given. † Not ascertained.

The table shows that in Dublin typhoid fever causes a greater waste of life than in any English town except St. Helen's, and in Ireland it is exceeded only by Belfast. Both Dublin and Belfast are rather low-lying cities, situated upon the estuaries of rivers, and at present are badly drained.

Professor Notter, of Netley, has pointed out the marked increase of typhoid fever in the European army in India, which is all the more remarkable as the general and zymotic death-rates in that army have decreased. During the ten years ended in 1879 the deaths amongst the troops ascribed to typhoid fever were in the ratio of 2·03 per 1,000; in the period 1880-85 they were 2·98 per 1,000; in 1887, 3·76; and in 1888, 3·75. Compared with these rates the mortality caused by this disease in British cities, even in Dublin, seems trivial. In some foreign cities the rates, too, are very high. For example, it is stated that the deaths from typhoid fever in Chicago, United States of America, were in 1890 in the ratio of 9 per 10,000 persons living; and in 1891, 22 per 10,000. In many Italian cities typhoid fever is more fatal than in Dublin.

Typhus fever caused formerly frightful ravages in Dublin, and even within a comparatively recent period it was rather rife. If we compare the mortality produced by this disease with that attributed to typhoid fever during recent years, it will be seen that the former is rapidly dying out, whilst the latter is increasing.

DEATHS IN DUBLIN METROPOLITAN REGISTRATION DISTRICT CAUSED BY TYPHUS AND TYPHOID FEVERS.

Year	Typhus	Typhoid
1881	194	123
1882	84	135
1883	141	132
1884	83	134
1885	54	144
1886	39	129
1887	24	135
1888	31	168
1889	18	228
1890	25	185
1891	6	191

The lessened death-rate in our towns, and more especially the decrease in the mortality caused by the infective diseases, taken

as a group, are unquestionably due to the improved hygienic conditions under which the urban populations are now placed. The chief modern sanitary reforms are as follows:—The introduction of ample supplies of water, taken from sources little likely to be polluted; the main drainage of towns; improvements in the construction and working of street sewers; the better methods of getting rid of the effete matters produced in dwellings; the abatement of the more serious trade nuisances; the prevention of overcrowding in tenement houses; the demolition of houses unfit for human occupation; the erection of improved dwellings for the working classes; the systematic purification of infected dwellings, clothing, and bedding; the better provision for treating and isolating fever cases; the various general Public Health Acts; the statutes relating to artisans' dwellings, to pollution of water-courses, to vaccination, to the diseases of the animals used as food by man, and the providing of parks, recreation-grounds, and open spaces in towns. The numerous local Improvement Acts, also, usually contain valuable clauses relating to sanitary matters.

These Acts of Parliament, aided by the efforts of sanitary associations, of individual sanitarians, of hygienic literature, and a more general knowledge and appreciation of the natural laws of health, are lessening decade by decade the difference between urban and rural death-rates.

The persistence of typhoid fever in so many towns in which other zymotics, notably small-pox and typhus fever, have died out or are dying out, indicates that the sanitary measures hitherto adopted have had less effect upon this fever than upon other infective maladies. The more intimate nature of this disease and the modes by which it is propagated, are subjects which possess great interest.

Typhoid fever is probably co-extensive with man; but it is more prevalent in some countries than in others, and in many parts of the world, including the British Islands, it is endemic. There seems to be little doubt as to the disease being caused by a micro-organism. The *Bacillus typhosus* has been described by Eberth, Gaffky, Fraenkel and Simmonds, Klebs and Eppinger, Koch, Myer and Friedländer, Rütimeyer and Neumann, Coates, Crookes and others.

This organism has been found in the blood, spleen, liver, kidneys, and other organs, and in great numbers in the mesenteric glands. It has been "cultivated" in various nutrient materials, and it is stated that typhoid fever has been induced by inoculation with this bacillus. Mond found them in a well at Civray, France,

during an epidemic of typhoid fever in 1889. Other observers have detected them in water; Neumann[a] found them in urine. The bacilli form rods, some very short, others 2 μ broad, and forming filaments up to 50 μ in length. They are occasionally constricted in the middle and exhibit spore formation.

The question—Can an attack of typhoid fever occur without an antecedent one, has often been discussed, and has been answered affirmatively by one of the greatest authorities on the subject of fever, the late Dr. Murchison. The spontaneous origin of the *materies morbi* of the disease by the decomposition of fæcal matters, is a theory which recent bacteriological research has, I think, completely exploded. In the most recent work on the eruptive and continued fevers—that of Dr. John William Moore—the author admits that the pythogenic theory of typhoid fever can no longer be maintained, although he himself formerly was disposed to believe in it.

There being a consensus of medical opinion in favour of the microbian origin of typhoid fever, the biology of the microbe comes to be a subject of great interest.

There are pathogenic microbes which apparently soon perish when detached from the animals in which they have been developed, whilst others are more persistent, and the spores of many kinds long retain, like vegetable seeds, their vitality and power to develop under favourable conditions. When supplied with nutrient material, such as gelatine, potato, &c., the pathogenic microbes seem to live and multiply, from which we may infer that they may when detached from animals become deposited by accident in dead organic matter capable of affording nourishment to them. It may, however, be reasonably assumed that the great majority of the pathogenic micro-organisms would soon perish if the animals with which they are associated ceased to exist. It is, moreover, quite certain that the microbes which produce some diseases would continue. For example—the *Bacillus malariæ* and amœboid bodies, and no doubt the bacilli and other micro-organisms producing all kinds of intermittent fevers, have an independent existence. They are found in the soils of many marshy districts, or rich alluvium, and in the polders and banks of rivers, especially in tropical and sub-tropical climates. They existed abundantly in these islands in former times, and have been got rid of by the drainage and cultivation of the soil. These organisms are clearly of the earth; but they produce specific diseases in man.

[a] Berliner klinische Wochenschrift. 1890.

The great variety of forms which malarial fever or ague assumes seems to indicate a plurality of poisons: which, indeed, may be the case, but to a more limited extent, with typhoid fever. Malarial organisms have been described recently by Laverna, Terni, and Girardini, Marchiafava and Celli. Golgi says that the various forms of malaria are the results of the action of different micro-organisms. The poison of malaria is conveyed to man chiefly by the medium of the air, and the characteristic organisms of the disease may be often, it is said, found in the sweat on the bodies of the people living in malarial districts. Water, however, it is well known, can hold in suspension malarial poison and retain it for considerable periods of time. In the United States it is a general belief that milk is sometimes the vehicle of this disease, and that it is spread also by the muscadine grape which grows in marshes. The rough and often glairy surface of this grape catches and retains the malarial poison. In India, France, and other countries in which malarial fevers occur, they have been in part attributed by competent observers to the use of water containing the poison of the disease. Without admitting or denying the theory that there is a kind of hybrid fever—typho-malarial—intermediate between typhoid fever and ague, I am disposed to believe that in relation to their propagation there are several points of resemblance between typhoid fever and the intermittent fevers. The intimate connection between them has been pointed out by Dr. Harley in the Lumleian Lectures for 1889. Johnston,[a] treating of Continued Fevers of the South (of the United States) says that it is probably changing its character in that region, is assuming a less defined type, and a milder form. He believes that many cases of so-called malaria are really typhoid fever, and he concludes by acknowledging the existence of a typho-malarial fever.

Kinyoun[b] found the *Plasmodium malariæ* in the blood of fever patients, and the bacillus of Eberth in their urine. He suggests for such fever the term entero-malarial.

It is established that malaria is not directly communicable from the healthy to the sound, but the same is almost true in reference to typhoid fever. The malarial poison is generally believed not to be reproduced in the human body, in which respect it differs from that of typhoid fever; but Cuboni, Marchiafava, and Gerhardt have proved that malaria is inoculable from man to man. Typhoid

[a] Philadelphia Medical Bulletin. 1890.

[b] New Orleans Medical and Surgical Journal. May, 1890.

fever is, like malaria, propagated through the media of air, water, and food: the poison of both diseases exist, in the soil. That of malaria unquestionably ascends from the earth, and so also, probably, do the microbes of typhoid fever. The natural habitat of the malarial organisms is the earth; is this also the case with the *Bacillus typhosus?* The biology of the organism is as yet so little known that it is impossible to state positively whether or not it is capable of multiplying indefinitely in the soil. Dr. Justin Karlinski states that it does not exist longer than three months in the earth: and that when exposed on the surface of the ground to sunlight and moisture, it quickly perishes.[a] But although the organism dies its spores may long survive, and under favourable conditions develop into the mature organism. I have carefully studied Karlinski's memoir, but he has not convinced me that the organisms which produce typhoid fever completely and quickly perish in the soil. Dr. Prudden, of New York, found that typhoid bacilli after confinement for 103 days in ice retained their vitality. Cassedebat states that they can live at least 44 days in distilled water. According to Grancher and Deschamps they survive for months in soils, although surrounded by numerous other organisms.

As an example of a view diametrically opposite to that of Karlinski's, I may quote an opinion expressed by Dr. Farquharson in a paper circulated by the Iowa Board of Health in 1883. Dr. Farquharson, after pointing out the resemblance between typhoid and malarial fevers, says—"Our farmers would not if they could do away with the exuberant richness of the virgin soil, nor diminish the almost tropical temperature of our summers, *yet these are the prime factors in the production of typhoid fever.*"

I am disposed to look very favourably upon Dr. Woodhead's theory, that all bacilli are primarily saprophytes—that is, have an independent existence apart from animals; and that they become, under altered conditions, pathogenic, and prey upon living tissues.[b] The saprophytes are, with perhaps the exception of the micro-organisms connected with malarial diseases, innocuous; but under certain conditions, at present not well understood, they may acquire virulence.

Those eminent bacteriologists, A. Rodet and G. Roux, have stated very positively that the typhoid bacillus of Eberth is merely

[a] Archiv f. Hygiene. Bd. XIII. Heft 3.

[b] Bacteria and their Products. By German Sims Woodhead, M.D. London: Walter Scott. 1891.

an altered and virulent form of the *Bacillus coli communis* described by Escherich. This assertion is a very remarkable one. Pasteur and others have shown that the "attenuation" or degeneration of certain pathogenic microbes greatly reduces their virulence, and may even render them completely innocuous.

According to Rodet and Roux[a] the bacillus coli communis, without losing its general botanical characters, acquires a toxic nature within the human organism, and becomes, in fact, Eberth's typhoid bacillus. The researches of Rodet and Roux seem further to show that the *Bacillus coli communis*, which may exist in the human organism without doing injury to the latter, can become highly virulent and infective when introduced into water. Hence they conclude that not only typhoid dejections, but simple fæcal pollution of water may produce typhoid fever in those who drink it. This view would seem to favour Murchison's pythogenic theory; but they really differ completely. In the latter it is assumed that the toxic principle of typhoid fever may originate in decomposing fæcal matter; but according to Rodet and Roux's theory a harmlesss saprophytic organism acquires by mere contact with water new and infective properties.

The recent investigations of Vallet[b] seem to confirm Rodet's and Roux's opinions. He shows that the *Bacillus coli communis* differs but slightly from Eberth's bacillus, and that both are infective. The former flourishes in cesspools—why not, therefore, in filth-laden soils?

It seems not improbable then that an organism which can exist for at least some weeks in earth and water is the *materies morbi* of typhoid fever. It may be harmless until it has undergone certain transformations in the system, or it may be immediately infective. Such an organism is clearly much nearer akin to the microbes of malarial disease than to those of such affections as gonorrhœa, typhus fever, or measles. The condition of soils or water has little relevancy to these and most other of the infective diseases; but it has a great deal to do with remittent, intermittent, and typhoid fevers—perhaps, also, with dysentery and diphtheria, which are probably malarial diseases.

Even if we do not admit that the microbes of typhoid fever can multiply in soils, it must be conceded that they can exist therein

[a] Comptes Rendus de la Société de Biologie. Tome II. No. 7. 1890.

[b] Le Bacillus Coli Communis dans ses Rapports avec le Bacille d'Eberth et l'Etiologie de la Fièvre Typhoïde. Paris. 1892.

for at least some time. Some soils are better adapted than others to the continued existence of these and other micro-organisms. Free movement of air and water in soils is favourable to the development and prolongation of such forms of life as exist in the earth. In stiff clays there are few organisms. Air below ground differs greatly as to the percentages of its constituents from the overground atmosphere. It is extremely rich in carbonic acid, derived from the decomposition of organic matter. Owing to the kinetic law of gases, an incessant interchange is going on between the overground and subterranean atmospheres; air is penetrating downwards into the soil, and the gases contained in the latter are diffusing into the space overground. There are interchanges between the two atmospheres brought about by other causes—as, for example, differences between the temperature of the ground and the general atmosphere; the action of winds; the warming of houses, which causes an insuction of air from the ground. The ascent of ground water and the descent of rain cause expulsion of underground air, and the descent of the ground water draws the outer air into the soil.

The connection between the sinking of ground water and the occurrence of typhoid fever has been investigated with great care by Professors Pettenkofer and Buhl, of Munich. They found that the cases of typhoid fever increased whilst the ground water was sinking, and that they were most numerous when the water having been unusually high sunk rapidly to the lowest level. This theory has been supported by many eminent epidemiologists, and opposed by others. It holds good as applied to several German towns; but it is stated that in others no relation between the sinking of ground-water and increase of typhoid fever has been noticed. In England Pettenkoter's theory has not received much support. An elaborate official Report upon the prevalence of the disease in Cologne was issued in 1889, which attributes it not to fluctuations of the underground water, but rather to the temperature and composition of the subterranean atmosphere, the proportion of bacterial life in it, and the opportunities afforded the micro-organisms to invade the atmosphere.

Localised outbreaks of typhoid fever can frequently be directly traced to the use of a particular supply of polluted water or milk, but the widespread epidemics of this disease, and even its persistent occurrence in so many towns, must be due to some other cause or causes. For example, in Dublin it was epidemic in 1891–92, and in

1889 it appeared in all parts of the city and adjacent districts. The city and all its suburbs, with one exception, are supplied with water procured from a gathering ground 26 miles distant, in a mountainous region of the County of Wicklow. There are very few persons living on the drainage-shed which furnishes the Dublin pipe-water, and of those few nearly all reside in a small village close to the reservoir in which the water is impounded. Last year it was asserted that a portion of the drainage of the village passed into the reservoir, but the statement was completely refuted. I believe there are few cities in the world supplied with such good water as Dublin fortunately possesses. I make this statement from the result of many careful examinations of the reservoir and its surroundings, and of hundred of chemical and biological examinations of the water. There are very few wells now in Dublin, and only an almost infinitesimal proportion of the water drank by the inhabitants is obtained from those sources. I dwell upon the fact that Dublin has a very pure water supply, because, in view of the undoubted fact that typhoid fever is propagated by the medium of infected water, it is noteworthy that Dublin has almost the highest typhoid fever death-rate in the United Kingdom.

The one suburb of Dublin (Rathmines Township, population 27,410), which has an independent supply of water, derives it also from a pure source, the gathering grounds being districts in the Dublin Mountains composed of granite and silurian rocks. In Rathmines typhoid fever prevails much to the same extent as in the other townships, which are placed under similar conditions as regards site and drainage.

The street sewers in Dublin are of excellent construction, and many of the more important ones have been recently reconstructed. Unfortunately at present they deliver their contents into a tidal river (the Liffey) which bisects the city. The mouths of the sewers are provided with valvular gates, which close and open as the tide in the river rises and falls. Some of the sewers are sealed up for the greater part of the twenty-four hours, and consequently their contents accumulate, and have to be in part removed by the usual method of pumping them up to a higher level, from whence they are run into the river. The sewers are provided with the usual ventilators, which allow a free communication between them and the street air. It will be seen then that Dublin is a low-lying city. The floors of the basement stories of many houses are not above the level of the highest tides, and some are actually

below it. It is evident then that the soils, subsoils, and rocks in the low-lying districts of the city have but a poor natural drainage, and that for a large portion of the day drainage is altogether suspended, except from the more elevated parts of the city into the lower. There is much stagnation of the water in the ground. A railway which, passing over the Liffey, connects the Dublin and Kingstown Railway with the Great Northern Railway, has recently been constructed. In sinking for foundations for the many bridges required by this line, a good opportunity for examining the nature of the subsoils and rock was afforded. I took advantage of it. I found that near the river the deep-lying gravel was more or less filled up with mud, which often possessed an offensive odour, and even evolved sulphuretted hydrogen gas. The water taken from the excavations was loaded with organic matter, and literally teemed with micro-organisms.

Fraenkel found a similar condition of things in the soil of Berlin near the river Spree. In the case of stagnant water in wells he found that when first pumped up it contained 10,800 microbes per cubic centimetre. After pumping up 500 litres the number of microbes fell to 54 per cubic centimetre. The following day, however, the water when pumped up first had 7,000 microbes per cubic centimetre, which number fell subsequently to 42.

Dr. P. F. Frankland, F.R.S., found that water which contained when collected 7 microbes per cubic centimetre, included 495,000 when kept for three days.

All this shows the wonderful development of microbian life which takes place in soil-water. But in the soil itself aerobian and anaerobian organisms are also present in vast numbers. Duclaux found two millions of them per centigram of the upper soil. The lessening of microbial life as it proceeds downwards in the earth, is, no doubt, due chiefly to the partial deprivation of oxygen—which is essential to the life of many kinds of bacteria—and perhaps to lower temperature. The life-history of the Bacillus typhosus is so little known that one can only speculate as to its behaviour in the soil. So far as we can judge, it belongs to the class of organisms which Professor Flügge terms *facultative anaerobes*, which develop most rapidly in the presence of oxygen, but can grow in the absence of air. Soil saturated with water, or stiff impertransible clays, would therefore be the least favourable for the development of the microbe of typhoid fever. A study

of the distribution of this disease in Dublin would seem to show that there is a relation between it and the geological character of the soil. Dublin and its suburbs are built partly upon stiff clay, partly upon gravel, resting upon hard rock or clay. The gravel bed was once the bottom of the sea, and now consists of raised ancient sea beaches, which extend along a considerable extent of the eastern coast of Ireland. This littoral gravel bed begins from the north side of Dollymount, on Dublin Bay, extends to Drumcondra, a northern suburb, and runs parallel to the river in its whole course through the city. The gravel on the south side of the city also runs alongside of the Liffey, extending at many points to a considerable distance south of the river. I have prepared a map showing the distribution of 1,980 cases of typhoid fever in Dublin during the ten years ended in 1891. That portion of the city which is situated on the gravel, or to use its geological designation, "post tertiary fluvio-marine sands and gravel," is indicated by a blue line on the map. All inside this line is gravel, all outside of it is the clay. 1,980 cases of typhoid fever have, so far as I can ascertain, occurred in Dublin during the ten years ended in the year 1890. These cases are indicated by red dots on the map. Dr. Grimshaw, Registrar-General for Ireland, has ascertained the number of persons living upon the gravel and also upon the clay. Dividing by the number of cases of typhoid fever the population on the gravel districts, it is found that they were in the ratio of one in every 92·8 persons. A similar division in reference to the clay district shows that only one in every 145·3 persons had typhoid fever. It seems, therefore, that the chances of contracting typhoid fever are fifty per cent. greater on the gravel than on the clay. The 1,980 cases of typhoid fever, indicated on the map, are not the only ones which have occurred in Dublin since 1882; but, as the compulsory notification of infective diseases has but lately come into operation in Dublin, I could only ascertain the existence of cases by means of hospital returns, by the registration of deaths, and by the Reports made by poor law medical officers.

I have placed in diagram form the facts relating to typhoid fever distribution in Dublin:—

THE RED MARKS INDICATE THE PLACES IN THE CITY OF DUBLIN IN WHICH CASES OF TYPHOID FEVER OCCURRED DURING THE YEARS 1882-1891 INCLUSIVE. ALL WITHIN THE DOTTED LINE IS GRAVEL, ALL OUTSIDE IS CLAY

	Population of the City of Dublin by 1891 Census	Per cent.	No. of Persons affected by Typhoid Fever in 10 years ended 1891		Ratio of Cases to Population
			No.	Per cent.	
Living upon gravel soils	75,486	30·7	813	41	1 in 92·8
Living upon the clay -	169,615	69·3	1,167	59	1 in 145·3
Total - -	245,001		1,980	100	

On the clay a larger proportion of the cases occur over old water-courses which have been filled up with loose soils. In Dublin the gravel for the most part rests upon clay or rock which retains water.

On the whole, the distribution of typhoid fever in the suburbs resembles that described for the city. There is not much of the gravel in Clontarf, but upon it most of the cases in the district occur. The rate is as high as in the city, whilst the general and zymotic death-rates are lower. In the Report to the War Office on the sanitary condition of the Royal Barracks, Dublin, by Dr. Grimshaw, Registrar-General, and myself, we pointed out that typhoid fever prevailed where the gravel existed.

A main drainage scheme has recently been adopted by the Corporation, and operations relative thereto will soon be commenced. I have every hope that when in operation for some time it will materially lessen our typhoid fever death-rate.

Dublin is a city with an undue amount of typhoid fever in it. It is supplied with pure water drawn from a distant source. Its local wells have fallen into disuse. Its street sewers are as good as those in the English towns. Like other places its milk-supplies may be now and then infected with typhoid poison. In 1879 I found that 63 cases of typhoid fever—of which 6 proved fatal—were caused by using milk obtained from a particular dairy. The owner of the dairy and two of his children had fever; and their dejections were deposited on the manure heap close to the place where the cows were milked.

The prevalence of typhoid fever in Dublin in 1889 and 1891 was by many persons attributed to the use of oysters; and for a time so great was this oyster scare that the sale of the mollusc nearly died out. In Belfast the same idea prevailed, but not so

generally. I may mention that at the meeting of the British Medical Association at Cambridge in 1881 I read a paper entitled "Sewage in Oysters," in which I pointed out the fact that sewage—which perhaps might contain the microbes of typhoid fever—was often present in oysters. I have repeatedly detected sewage in oysters taken from the shores of Dublin Bay. Oysters, cockles, mussels, and other lamellibranchiate molluscs are often eaten uncooked, and their shells enclose a liquid which is also often drank raw. Although oysters when deserted by the tide usually keep their valves closed, they do not invariably do so; and, therefore, at low water sewage trickling down the shore is likely to find its way into the interior of the oyster and other shell fish. I would prefer having oysters taken from the lonely coasts of Clare and Kerry than from the estuaries of rivers, which receive the filth of large towns.

It is possible that vegetables taken from an infected soil might be the vehicle of the disease. Salad, radishes, and other esculents are often brought into the house without having been separated from the soil in which they have been grown: if eaten without being perfectly washed they might introduce the microbe of typhoid fever into the body.

Although infected food may cause cases of typhoid fever in Dublin, it is not probable that they are more numerous there than elsewhere; we must, therefore, look for some other more common source of the disease than infected water, milk, and other foods. Of course the house-drains may be blamed for the prevalence of the disease. I examine, or cause to be examined, the sanitary condition of the houses in which it occurs; in a large proportion of them defects are detected, the traps are out of order, the drains are choked up with fats or other obstructions, or they consist of rubble—in short, the usual sanitary defects found in so many houses when carefully overhauled are detected in nearly half of the houses examined. On the other hand, the disease constantly makes its appearance in houses where no defects can be detected, where the "smoke test" shows no leak of drain or defect of trap, where the water-closets are of the most recent construction, and in good working order, and where the water is taken direct from high pressure taps. Again, the disease does not appear in houses in which for years the sanitary accommodation and drains have been imperfect.

It is admitted that there has been a great improvement during

recent years in the construction of house drains, and the old "built" sewers have been all but completely replaced by earthenware pipes, laid in cement. As I have already stated, the zymotic death-rate has greatly declined, but still typhoid fever more than holds its own. I can only account for this by assuming that the microbes of the disease have established themselves in the soil, that they multiply therein, and that they issue occasionally from it into the atmosphere, which, consequently, becomes infected. It is only in this way that we can reasonably account for the periodic character of the disease, for its seasonal intensity, for its epidemics. It may be said as against this view that we have epidemics of small-pox, scarlet fever, measles, and so on; but these diseases are directly communicable from person to person, whereas that is not the case with typhoid fever. The w.c.s, house drains, and street-sewers do not vary much from year to year, and when they do vary it is generally because they are improved. In the soil, therefore, we must look for the cause of the endemicity of typhoid fever in Dublin and in other places. This theory is greatly strengthened by the fact that the porous soils are to a much greater extent likely to be the habitat of the organism than the stiff clays. The conditions of existence for all kinds of organisms are more favourable in loose soils than in adhesive dense clays, in which air cannot freely circulate. The action of strong winds, and the rising and sinking of underground water, more readily cause movements of air in gravels and loose soils than in clays; and the escape of microbes from the former under such circumstances must the more freely occur. The streets of Dublin have lately been to a large extent paved with stone setts, which circumstance may, perhaps, account to some extent for the increase of typhoid fever. The underground air cannot now diffuse into the atmosphere over the roadway, and therefore may be drawn in larger quantities into the houses, the basement floors of which are rarely concreted.

The question—how do the microbes of typhoid fever ascend from the soil into the atmosphere? is one that cannot be answered off-hand. Vegetable organisms that exist in the superficial layers of soil are easily detached by strong winds, and carried into the air. The malarial poison, which is clearly derived from the soil, can be transferred to the air; but probably it exists on or near the surface. If the typhoid bacillus is deep-seated amidst the decomposing organic matter of the soil, it can only with difficulty reach the surface. So long as the ground is thoroughly wet the

organisms will remain there. When the upper layers of soil become quite dry, the organisms in them undergo a species of desiccation, and in that state they are easily transportable to the air by the agency of the forces acting upon the subterranean atmosphere to which I have already referred. When they are completely desiccated, they are probably innocuous; but they may sometimes reach the air without being deprived of all their moisture. The spores of the bacillus may also, from their extreme minuteness and lightness, be carried up from the soil by air-currents.

Hoffmann[a] has pointed out that there is in porous soils what he terms a superficial zone of evaporation, in which the moisture varies from saturation to zero. In the hot summer weather the zone is considerable in extent, and when rain descends on it, after a period of heat and drought, it is often capable of retaining the whole of the water without its lower border becoming wet. In such there is always a dry layer between the surface part, which is temporarily wetted by the rain, and the deeper strata in which the water lies. Under these conditions the impurities which reach the soil become deposited in the dry zone; under this zone is situated a layer which is always wet. When the upper zone is filled with rain the amount of water in the second zone remains constant, for any excess which it may receive passes down into the third zone, or that of the underground water. If the typhoid bacillus exists in the first zone, it must alternately be immersed in water and in air. In the former case it remains in the soil, in the latter it may be transported to the atmosphere by air-currents. The deeper the ground-water sinks, the greater will be the extent of the zone in which the movements of organisms can take place; but even whilst the ground-water is sinking, the outermost layer of soil may be kept moist by slight and long-continued rain. In this case, however large the dry zone, none of its organisms would escape from it into the air.

During the winter and early months of the year the surface soil, and often all the layers beneath it, are so wet that but few, if any, organisms can escape from it. There is very little difference in Dublin between the rainfall of the different quarters of the year, but in the summer the water which falls upon the ground is not only carried off by drainage, but it is largely evaporated. In the latter part of summer, and in the autumn, the superficial

[a] Archiv für Hygiene. Vols. I. and II. Part II.

layers of soil often become sufficiently dry to permit of the passage through them of micro-organisms. The autumn and early winter are the periods during which typhoid fever attains its maximum, and the majority of writers on the subject agree that the disease often becomes epidemic after an unusually hot and dry summer.

I admit that the chances of detaching micro-organisms from moist surfaces are slight, but it must occur now and again. Those of typhoid fever have not, I believe, been detected yet in the atmosphere, but pus organisms and the microbes of diphtheria have.

A very fascinating theory is that which assumes that the micro-organisms which cause disease are saprophytes which have acquired, under at present unknown conditions, toxic properties. This theory fits in better with our knowledge of malaria and typhoid fever than with that of most of the other zymotic diseases. It would, perhaps, account for the great variety of forms which the disease assumes. In the United States of America malarial fevers are lessening because the cultivation of the soil is extending; but the increase of population in that country is producing a greater development of typhoid fever. There are cases of fever met with constantly which almost resemble typhoid fever, but still have some points of resemblance to malaria, and *vice versa*. Lomstaud-Chatenet[a] has described some remarkable cases of typhoid fever which seem to have had a malarial origin.

There is quite a literature of the so-called typho-malarial fever, which one can hardly peruse without coming to the conclusion that at least in the ætiology of typhoid fever and of malaria there are very striking analogies. New arrivals in a country where malaria exists are the least likely to escape. The same observation in reference to typhoid fever has been mentioned by Murchison. In India the young soldiers on their arrival are peculiarly liable to contract the disease.

[a] Sur la forme palustre de la fièvre typhoïde. Paris. 1870.

(*To be continued.*)

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF MEDICINE.

President—J. Magee Finny, M.D.; President of the Royal College of Physicians of Ireland.
Sectional Secretary—A. N. Montgomery, M.R.C.P.I.

Friday, April 22, 1892.

Dr. J. Hawtrey Benson in the Chair.

The Desirability of Operative Interference in Suspected Perforation of Chronic Ulcer of the Stomach.

Dr. Parsons read a paper on the desirability of operative interference in suspected perforation of chronic ulcer of the stomach. [It will be found at page 26.]

Mr. M'Ardle said that Dr. Parsons must not contrast operations for injury, pelvic abscess, or ruptured ovarian cyst, with that for chronic perforations, since in these cases (as in one of those mentioned in this paper) the margin of the perforation is so soft that sutures will not hold, while in those cases of injury the edges of the wound are healthy and permit of suture. The other cases do not interfere materially with vital organs, and so should not be brought into the question. It is doubtful if Lembert's suture will ever be found effectual in closing perforating ulcers of the stomach, and the delay occasioned by the application of this suture would in itself prove fatal to a patient already in a state of collapse. It seemed to the speaker that the introduction of a large bone plate through the stomach wound, sutures from this plate through the stomach wall, and out through the anterior abdominal wall, would secure

the stomach forwards, thus establishing a fistula. This operation would occupy from 20 to 30 minutes, as in similar operations on the intestines, while resection of the edges of the ulcer and suture after Lembert's method must occupy a time sufficient to prevent a favourable result. Should we succeed in reducing the time required for the operation, and should the cases come under treatment before exhaustion or sepsis occurs, such success may be hoped for as attends laparotomy for other than perforative peritonitis.

Dr. O'Carroll agreed that, in cases which can be certainly diagnosticated as cases of perforation of stomach, operation is desirable. But it was inevitable that a large number of abdominal sections would be done without finding the perforation, and still more without being able to do anything of advantage to the patient. There were difficulties in diagnosis which had yet to be got over—namely, the recognition of perforation in cases in which a false stomach has been formed by peritoneal adhesions, and in which the fatal perforation has occurred, and the differentiation of gastric perforation from many cases of acute and subacute gastritis simulating it. Of course there remains the wider difficulty of being sure that the perforation is a gastric one at all.

Dr. Walter Smith alluded to the grave responsibility which now so often devolves upon the physician of advising for or against operative interference in cases of acute intra-abdominal inflammation. Speaking from his own experience, he could confidently say that in no single case, even when the issue was fatal, had he reason to regret having called for surgical intervention.

Dr. J. W. Moore agreed with Dr. Walter Smith in his views as to the interdependence of medicine and surgery, but was glad to observe that, while thus expressing himself, Dr. Smith was careful to avoid any suggestion that a physician should practise surgery or a surgeon medicine. Dr. Moore recalled how closely the subjective sensations of improvement experienced by the victim of perforation after some hours resembled the mental state, amounting to euthanasia, often observed in those dying of malignant smallpox of the purpuric or hæmorrhagic variety. The success of laparotomy in cases of perforation in enteric fever was very encouraging. Up to the close of November, 1891, 19 cases with 4 recoveries had been recorded. This represented a percentage of recovery of more than 20 per cent—no small gain in the case of the most perilous of all the complications of enteric fever.

Dr. C. F. Moore could not say whether present experience throws any light in the way of comparative pathology on the question of peritonitis from injuries or disease. He had once examined the abdomen of a ten-foot crocodile and found there several stones encapsuled in fibrous tissue and hanging thereby from different parts of the alimentary canal. Some of these foreign bodies were as large as a small closed

fist, and had evidently been extruded without injuring the health of the animal.

Dr. Parsons replied.

Detachment of Retina.

Mr. Story read notes of three cases of detached retina in myopic eyes, which had either partially or completely recovered. In one case complete cure had taken place after rest in bed with bandaging and the use of atropin drops. In the second a permanent improvement had resulted from similar treatment, leaving a useful eye, which had now existed for 14 years. In the third the detachment was complicated with keratitis punctata and glaucoma, and subsided completely seven weeks after the operation of sclerotomy.

Mr. Swanzy stated that Mr. Story's experience of the treatment of detached retina coincided very much with his own. A case of the disease does occasionally get well under treatment, or seem to do so. It is, however, a question, whether the treatment has had much to do with the case. A lady consulted Mr. Swanzy some years ago, and being unable to place herself under the lengthened treatment required, returned home to the country. After a year she presented herself again, when Mr. Swanzy found that the detachment had quite gone back and the eye was perfectly normal. Treatment, therefore, may have little to do with the apparent cures by any of the various methods proposed.

The Section then adjourned.

SECTION OF SURGERY.

President—H. G. Croly, President of the Royal College of Surgeons in Ireland.

Sectional Secretary—R. L. Swan, F.R.C.S.I.

Friday, May 20, 1892.

Sir W. Stokes in the Chair.

Trephining in Cerebral Meningitis.

Mr. M'Ardle read his paper entitled "Trephining in Cerebral Meningitis." [It will be found at page 17.]

The Chairman (Sir William Stokes) observed that, in his opinion, Mr. M'Ardle's communication was one of great importance in connection with the subject of brain surgery, which for some years has been, and still is, engaging the attention of surgeons. He agreed with Mr. M'Ardle's remarks in reference to the operation of trephining acting as a preventive measure to the occurrence of inflammatory troubles subsequently super-

vening. His experience goes a long way to confirm the views of the older surgeons in reference to the value of trephining as a means of preventing inflammatory complications after cranial injuries. Mr. M'Ardle's remarks as to the necessity of accurately determining by careful measurements the appropriate situation where the operation should be performed were of the greatest importance.

Mr. Tobin referred to a case somewhat similar to that of Mr. M'Ardle's, in which he got a successful result after trephining and draining away a quantity of serum underlying the dura mater, and gave it as his opinion that tubercular meningitis might, in a considerable number of cases, be successfully treated if they were freely drained at an early stage.

Mr. J. H. Scott said two minor points in this case appear of some importance. First, why was mercury administered? He considered mercury had no effects on any inflammatory effusions except those of a syphilitic origin. Secondly, the apparent osseous closure of the trephine opening without replacement of the removed bone. He thought it probable the osseous development was due to some of the superficial osteoclasts adhering to the detached dura mater.

Mr. M'Ardle was sorry that he could not elicit an explanation of the change of pulse noted by Mr. Patteson. The speaker's opinion was that the working of the trephine stimulated those centres which the pressure of the fluid prevented from action without strong stimulation. In the case detailed by Mr. Tobin the chief symptoms were the same as in the case noted, but the deviation of the eyes was in the opposite direction. The difference is easily explained in Mr. Tobin's case—the pressure was not sufficient to check the action of the centres on the injured side, but the irritation of these centres would have the effect noted. Mr. M'Ardle, replying to Mr. Scott, said he used mercury in this case because in very many non-syphilitic inflammations, meningeal and otherwise, great benefit resulted. In reply to Mr. Cox, Mr. M'Ardle said he would not operate on cases in which the meningeal trouble was secondary to some rapidly-progressing fatal affection, or in chronic alcoholism where fibroid degeneration of important organs was present. The speaker begged to thank Sir William Stokes for his support of the opinion that trephining should have been tried in the first case related.

Electrolysis in Affections of the Male Urethra.

Dr. Pearson read a paper on the uses of electrolysis in affections of the male urethra.

(1.) Introduction to the subject of urethral electrolysis.
(2.) Description of apparatus required for its employment.
(3.) Description of its method of employment in cases of gleet, stricture, &c.
(4.) History of seven cases subjected to electrolytic treatment.

(5.) Deductions from its employment in these cases.

(6.) General conclusions regarding its uses.

Sir William Stokes congratulated the author on the interest and importance of his communication. He could not, however, endorse what had fallen from the author in reference to the permanence of the cure of stricture by electrolysis. In fact, in Sir W. Stokes' opinion, after no method of treatment can it be honestly said that a cure has been effected, and in his experience a return was just as likely to occur as after the treatment by internal or external division or gradual dilatation. In the treatment of gleet, Sir W. Stokes thought that Dr. Pearson's experience should stimulate surgeons to give it a full trial.

Mr. Thomson said he had used the method described by Dr. Pearson in gleet with success. But his experience in stricture was not satisfactory, and he had not pursued the treatment. He was acquainted with Dr. Newman's claims, and the work that had been done by Dr. Steavenson. But if the treatment was so successful as was claimed, was it not curious that all surgeons the world over did not adopt it. The question was really—Was stricture of the urethra curable? He (Mr. Thomson) had never seen a case where, no matter what method was adopted, he was able to say to a patient: You are cured—that is, that the person could go on without the periodical use of a bougie. He had never met anyone who claimed such a result. Was it attainable by electrolysis? If it was, they ought all to adopt this plan, but until such a claim could be substantiated he did not think that electrolysis had any advantage over some of the simpler methods.

Mr. Swan said that, for his part, he did not believe in the permanent cure of stricture by electrolysis, no more than he believed in the same result by Holt's method, by gradual dilatation, or by any form of urethrotomy. He remembered, when Holt's method was in fashion, it was thought that stricture was at last conquered. Many persons, he believed, were Holted (if he might use the term) who never had stricture. Only last month he had used Maisonneuve's instrument on a gentleman, the possessor of a tight stricture, who had been cured for a time by electrolysis.

Mr. M'Ardle said the only experience he had of this treatment for stricture was that he had been obliged to use Maisonneuve very frequently on cases of so-called cures by electricity. As to the good effect of the application of the electric current to patches of granular urethritis and small patches of ulceration, there can be no doubt, and if large leaden electrodes, carefully guarded, were used, the healing should be more rapid.

Mr. Tobin said the question of the permanent cure of stricture by electrolysis resolves itself into this—Can electrolysis cause the disappearance of cicatricial tissue? His opinion was that it cannot. However, on

hearing the excellent paper just read, he should again try; and the case he should select would be one of stricture at the orifice of the urethra. If it then succeeds, if it causes the disappearance of a stricture that he could see, then he should believe in it, and extend its application to all cases that he met with.

The Section then adjourned.

SIMPLE URINARY TESTS.

Dr. Austin Flint writes (*Medical News*, Philadelphia, Jan. 9th, 1892):—"I have had constructed a tube, with an arbitrary graduation up to 100. In a test-tube of convenient size, I boil a little more than half a fluid-ounce of urine, to which have been added four or five drops of ordinary acetic acid. If the urine be turbid, it may be filtered before being boiled. After thorough boiling and allowing the urine to cool for two or three minutes, it should be well shaken, in order to divide the precipitated albumen as finely as possible, and then the graduation tube is filled to the 100 mark. After 12 hours' standing the percentage of precipitate is noted. The albumen will settle in twelve hours, and the volume of the deposit is not sensibly diminished if it be allowed to stand for twenty-four hours. The proportion of albumen measured in this way should be called *the percentage in volume of undried albumen.* This method is not exactly accurate, but it is sufficiently so for ordinary purposes. It will indicate fairly well a proportion of 1 or 2 per cent. of albumen. When the proportion is less than 1 per cent., the ordinary method by contact or by simple boiling with a few drops of acetic acid would indicate 'a trace' of albumen. While writing upon this subject, I am led to describe a simple apparatus for detecting the presence of sugar in the urine, when the results of Fehling's test are uncertain. A small straight bottle or a small test-tube is fitted with a cork, through which is passed a small tube that reaches nearly to the bottom. The glass tube is bent so that the apparatus will hang over an ordinary test-tube or other convenient vessel. The bottle is completely filled with urine, with which a piece of Fleischmann's yeast, about the size of a pea, has been thoroughly mixed. In putting in the cork, it is necessary to be careful to exclude every bubble of air. If the apparatus be kept for a half hour at a temperature of from 80° to 90° F., a bubble of gas will appear if sugar be present in the smallest quantity. The apparatus may be placed in the sun or near a heater, but the temperature should not be higher than 100°. This is valuable as a negative test. In case of doubt I have often been able to determine absolutely the presence or absence of sugar before I had finished taking the history."

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, May 21, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	April 30.	May 7.	May 14.	May 21.		April 30.	May 7.	May 14.	May 21.
Armagh -	0·0	0·0	7·0	21·0	Limerick -	32·3	25·3	19·6	15·4
Belfast -	26·1	29·3	28·3	23·6	Lisburn -	12·8	21·4	34·3	4·3
Cork -	33·2	30·4	22·1	27·7	Londonderry	25·1	11·0	26·7	15·7
Drogheda	79·1	22·0	39·5	13·2	Lurgan -	22·8	31·9	22·8	31·9
Dublin -	42·8	32·1	29·7	33·3	Newry -	44·3	12·1	8·1	20·1
Dundalk -	12·6	4·2	8·4	12·6	Sligo -	36·1	67·0	36·1	87·7
Galway -	22·7	15·1	22·7	26·4	Waterford -	20·0	17·5	40·0	10·0
Kilkenny	4·7	23·6	33·0	28·3	Wexford -	58·7	31·6	31·6	45·2

In the week ending Saturday, April 30, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 19·8), was equal to an average annual death-rate of 20·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·3 per 1,000. In Glasgow the rate was 23·8, and in Edinburgh it was 21·4.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 33·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·9 per 1,000, the rates varying from 0·0 in eight of the districts to 16·1 in Newry—the 11 deaths from all causes registered in that district comprising 4 from whooping-cough. Among the 128 deaths from all causes registered in Belfast are 8 from measles (a decrease of 10 as compared with the number for the preceding

week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 1 from diarrhœa. The 48 deaths in Cork comprise 4 from measles, 2 from typhus, and 2 from whooping-cough. The 18 deaths in Drogheda comprise 2 from typhus and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 246—131 boys and 115 girls; and the registered deaths to 294—127 males and 167 females.

The deaths, which are 101 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 43·9 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 42·8 per 1,000. During the first seventeen weeks of the current year the death-rate averaged 37·8, and was 6·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 37, being 13 in excess of the average for the corresponding week of the last ten years, but 18 under the number for the week ended April 23. The 37 deaths comprise 20 from measles (being 13 under the number from that cause for the preceding week), 1 from influenza, 11 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 1 from dysentery.

Eighty-six cases of measles were admitted to hospital, being 13 in excess of the admissions for the preceding week, but 3 under the number for the week ended April 16. Sixty-seven measles patients were discharged, 3 died, and 190 remained under treatment on Saturday, being 16 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of enteric fever and two cases of scarlatina, but no cases of typhus were received. Twenty-two cases of enteric fever, 13 of scarlatina, and 1 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 86, being 40 over the number for the preceding week, and 46 in excess of the average for the 17th week of the last ten years. They comprise 27 from bronchitis, 37 from pneumonia or inflammation of the lungs, 2 from croup, and 2 from pleurisy.

In the week ending Saturday, May 7, the mortality in thirty-three large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 19·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·4 per 1,000. In Glasgow the rate was 23·7, and in Edinburgh it was 17·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 28·5 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·5 per 1,000, the rates varying from 0·0 in nine of the districts to 15·5 in Sligo—the 13 deaths from all causes registered in that district comprising 1 from simple continued fever and 2 from diarrhœa. Among the 144 deaths from all causes registered in Belfast are 21 from measles (an increase of 13 as compared with the number for the preceding week), 1 from scarlatina, 5 from whooping-cough, 2 from diphtheria, 1 from simple continued fever, 2 from enteric fever, and 3 from diarrhœa. The 44 deaths in Cork comprise 1 from measles, 1 from typhus, and 3 from whooping cough. The 5 deaths in Drogheda comprise 2 from typhus.

In the Dublin Registration District the registered births amounted to 193—106 boys and 87 girls; and the registered deaths to 221—105 males and 116 females.

The deaths, which are 28 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 33·0 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 32·1 per 1,000. During the first eighteen weeks of the current year the death-rate averaged 37·5, and was 5·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Fifty-three deaths from zymotic diseases were registered, being 33 in excess of the average for the corresponding week of the last ten years, and 16 over the number for the week ended April 30. They comprise 40 from measles (being 20 over the number from that cause for the preceding week), 2 from influenza and its complications, 4 from whooping-cough, 1 from diphtheria, and 2 from diarrhœa.

The number of cases of measles admitted to hospital is 57, being a decline of 29 as compared with the admissions for the preceding week, and 16 below the admissions for the week ended April 23. Sixty-eight measles patients were discharged, 5 died, and 174 remained under treatment on Saturday, being 16 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of enteric fever, 4 of scarlatina, and 2 cases of typhus. Twenty-one cases of enteric fever, 16 of scarlatina, and 3 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had risen from 46 for the week ended April 23, to 86 for the following week, fell again to 46, but this number is 4 over the average for the corresponding week of the last ten years. The 46 deaths comprise 23 from bronchitis, 18 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, May 14, the mortality in thirty-three large English towns, including London (in which the rate was 19·5), was equal to an average annual death-rate of 20·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·8 per 1,000. In Glasgow the rate was 27·6, and in Edinburgh it was 21·0.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 27·7 per 1,000 of the unrevised population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·5 per 1,000, the rates varying from 0·0 in ten of the districts to 5·2 in Sligo—the 7 deaths from all causes registered in that district comprising 1 from simple continued fever, Among the 139 deaths from all causes registered in Belfast are 14 from measles (a decline of 7 as compared with the number for the preceding week), 3 from whooping-cough, 2 from diphtheria, 1 from simple continued fever, 3 from enteric fever, and 2 from diarrhœa. The 32 deaths in Cork comprise 2 from measles.

In the Dublin Registration District the registered births amounted to 220—113 boys and 107 girls; and the registered deaths to 208—92 males and 116 females.

The deaths, which are 18 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 31·0 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 29·7 per 1,000. During the first nineteen weeks of the current year the death-rate averaged 37·2, and was 5·7 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 38, being 19 in excess of the average for the corresponding week of the last ten years, but 15 under the number for the week ended May 7. The 38 deaths comprise 24 from measles (being 16 under the number from that cause in the preceding week), 2 from influenza and its complications, 3 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa.

Fifty-eight cases of measles were admitted to hospital, being one over the admissions for the preceding week, but 28 below the admissions for the week ended April 30. Sixty-six measles patients were discharged, 6 died, and 160 remained under treatment on Saturday, being 14 under the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 3 cases of enteric fever, 4 of scarlatina and 1 of typhus. Fifteen cases of enteric fever, 14 of scarlatina, and 4 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 48, being 2

over the number for the preceding week, and 11 above the average for the 19th week of the last ten years. The 48 deaths consist of 25 from bronchitis, 20 from pneumonia or inflammation of the lungs, 2 from pleurisy, and 1 from croup.

In the week ending Saturday, May 21, the mortality in thirty-three large English towns, including London (in which the rate was 19·4), was equal to an average annual death-rate of 19·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·5 per 1,000. In Glasgow the rate was 26·8, and in Edinburgh it was 13·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·4 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 4·3 per 1,000, the rates varying from 0·0 in eight of the districts to 4·9 in Belfast—the 116 deaths from all causes registered in that district comprising 13 from measles (a decrease of 1 as compared with the number for the preceding week), 1 from scarlatina, 2 from whooping-cough, 1 from simple continued fever, 5 from enteric fever, and 2 from diarrhœa. Among the 40 deaths from all causes registered in Cork are 4 from measles and 1 from enteric fever. The 11 deaths in Limerick comprise 1 from typhus and 1 from whooping-cough. The 10 deaths in Londonderry comprise 2 from whooping-cough.

In the Dublin Registration District the registered births amounted to 181—100 boys and 81 girls; and the registered deaths to 232—109 males and 123 females.

The deaths, which are 58 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 34·6 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 33·3 per 1,000. During the first twenty weeks of the current year the death-rate averaged 37·1, and was 5·9 over the mean rate in the corresponding period of the ten years 1882–1891.

Forty-four deaths from zymotic diseases were registered, being 23 in excess of the average for the corresponding week of the last ten years, and 6 over the number for the week ended May 14. The 44 deaths comprise 28 from measles (being 4 over the number from that cause in the preceding week), 1 from typhus, 4 from influenza and its complications, 3 from whooping-cough, 4 from diarrhœa, and 1 from dysentery.

Seventy-three cases of measles were admitted to hospital, being 15 over the admissions for the preceding week, and 16 over the number for the week ended May 7. Sixty-seven measles patients were discharged, 3 died, and 163 remained under treatment on Saturday, being 3 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 3 cases of enteric fever, 3 of scarlatina, and one of typhus. Eighteen cases of enteric fever, 17 of scarlatina, and 4 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 45, being 12 in excess of the average for the 20th week of the last ten years, but 3 below the number for the preceding week. The 45 deaths comprise 25 from bronchitis and 15 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of May, 1892.

Mean Height of Barometer,	29·944 inches.
Maximal Height of Barometer (on 12th, at 9 a.m.),	30·381 „
Minimal Height of Barometer (on 28th, at 9 p.m.)	29·474 „
Mean Dry-bulb Temperature,	52·9°.
Mean Wet-bulb Temperature,	49·3°.
Mean Dew-point Temperature,	45·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·310 inch.
Mean Humidity,	77·0 per cent.
Highest Temperature in Shade (on 25th)	69·5°.
Lowest Temperature in Shade (on 5th),	37·9°.
Lowest Temperature on Grass (Radiation) (on 5th),	31·5°.
Mean Amount of Cloud,	59·9 per cent.
Rainfall (on 19 days),	4·177 inches.
Greatest Daily Rainfall (on 28th),	2·056 inches
General Directions of Wind,	W.S.W., E.N.E

Remarks.

A generally favourable though changeable month. At first dry, cold, and bright; afterwards warm but unsettled, with frequent showers or even heavy rains, and strong southwesterly winds. After the 12th, rain fell almost daily. On the 28th there was an extraordinary downpour, lasting 6 hours, within which space of time 1·9 inches of rain fell in Dublin, or at the rate of 7·6 inches in 24 hours. The total rainfall of the 28th was 2·056 inches, or nearly one-half that of the whole month.

In Dublin the arithmetical mean temperature (53·8°) was decidedly above the average (52·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 52·9°. In the twenty-seven years ending with 1891, May was coldest in 1869 (M. T. = 48·2°), in 1885 (M. T. = 48·7°), and in 1879 (the "cold year") (M. T. = 48·8°). It was warmest in 1868 (the "warm year") (M. T. = 55·8°, and 1875 (M. T. = 54·9°). In 1886 the

M. T. was 50·5°, in 1887 it was 51·8°, in 1888 it was 52·5°, in 1889 it was 54·6°, in 1890 it was 53·2°, and in 1891 it was only 49·6°.

The mean height of the barometer was 29·944 inches, or 0·045 inch below the corrected average value for May—namely, 29·989 inches. The mercury rose to 30·381 inches at 9 a.m. of the 12th, and fell to 29·474 inches at 9 p.m. of the 28th. The observed range of atmospherical pressure was, therefore, 0·907 inch—that is, a little more than nine-tenths of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 52·9°, or 7·6° above the value for April, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 53·3°, or 1·7° above the average mean temperature for May, calculated in the same way, in the twenty-five years, 1865–89, inclusive (51·6°). The arithmetical mean of the maximal and minimal readings was 53·8°, compared with a twenty-five years' average of 52·0°. On the 25th the thermometer in the screen rose to 69·5°—wind, W.S.W.; on the 5th the temperature fell to 37·9°—wind, N.E. The minimum on the grass was 31·5° also on the 5th.

The rainfall amounted to 4·177 inches, distributed over 19 days. The average rainfall for May in the twenty-five years, 1865–89, inclusive, was 2·030 inches, and the average number of rainy days was 15·4. The rainfall and the rainy days, therefore, were much above the average. In 1886 the rainfall in May was very large—5·472 inches on 21 days; in 1869 also 5·414 inches fell on 19 days. On the other hand, in 1871, only ·378 of an inch was measured on 9 days; in 1876 only ·798 of an inch fell on 6 days; in 1887 only ·882 of an inch fell on 10 days; and in 1888 only ·978 of an inch on 11 days. In 1890, 2·438 inches fell on 17 days. In 1891 May was the first month in which the rainfall exceeded the average. It amounted to 2·792 inches on 17 days.

Solar halos were seen on the 17th, 24th, and 27th. High winds were noted on as many as 11 days, attaining the force of a gale, however, on only one occasion—namely, the 16th. Hail fell on the 16th. No thunder or lightning occurred in Dublin.

During the month the thermometer in the screen did not fall below 32°, but on four nights a temperature of 32° or less was recorded on the grass. The mean minimal temperature on the grass was 41·3°, compared with 37·7° in May, 1891, 42·2° in 1890, 42·4° in 1889, 37·5° in 1888, and 37·9° in 1887.

During the week ended Saturday, the 7th, while an abundant rainfall was experienced over the greater part of the British Islands between Monday and Wednesday, there was little spring growth owing to a persistence of northeasterly winds and low temperatures, both by day and by night. At the beginning and close of the week gradients for westerly (S. to W. and N.W.) winds existed and the weather was comparatively

mild; but from Monday to Friday inclusive the highest atmospherical pressure was found to the N. and N.W., while a series of depressions alternately formed and dispersed along a trough of low pressure extending northeastwards from the Bay of Biscay to the Baltic. Hence, the cold northeast winds already referred to. On Sunday, the 1st, the weather was unsettled in Ireland and a heavy fall of rain occurred in the S. (0·95 inch at Roche's Point). On Monday night rain set in with N.E. winds in Dublin, 0·476 inch falling between 9 p.m. of this day and Wednesday morning. There was alternate cloud and sunshine from this time to the end of the week, but no rain fell in Dublin. The mean height of the barometer was 30·034 inches, pressure varying between 29·784 inches at 9 p.m. of Sunday (wind, S.E.) and 30·253 inches at 9 a.m. of Friday (wind, E.). The corrected mean temperature was 46·7°. On Saturday the screened thermometers rose to 58·7°, having fallen to 37·9° on Thursday. The mean dry bulb reading at 9 a.m. and 9 p.m. was 46·9°. Rain fell on two days to the total amount of ·476 inch, of which ·316 inch was measured on Monday. The prevailing wind was N.E. A sharp frost occurred on Friday night over S.E. England, the thermometer falling in the screen to 26° at Cambridge and to 29° even in London.

Taken as a whole, the weather of the week ended Saturday, the 14th, was favourable. Until Thursday, it was settled and quiet—warm sunny days alternating with sharp, hazy nights. On Thursday the sky became overcast with cirro-stratus and cumulus in Ireland and the atmosphere grew close and oppressive. In the afternoon a copious fall of warm rain set in all over this country, literally changing the face of nature through the impetus it gave to vegetation. Friday was a breezy, dull, rainy day, while Saturday proved bright with fresh to strong westerly winds. The rainfall of Thursday and Friday was general throughout Ireland; in Scotland rain also fell generally but in smaller quantities; but in England the weather remained fair and dry until Friday, when the showers became tolerably general except in the extreme S.W. of that country. In Dublin the mean height of the barometer was 30·186 inches, pressure ranging between 30·381 inches at 9 a.m. of Thursday (wind, E.) and 30·002 inches at 9 p.m. of Saturday (wind, W.). The corrected mean temperature was 53·7°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was also 53·7°. The thermometer in the shade rose to 68·9° on Thursday and fell to 39·2° on Monday. The rainfall amounted to ·618 inch on three days, ·479 inch being entered to Thursday. An almost total eclipse of the moon (953 out of 1,000 parts being eclipsed) was well seen on Wednesday night. Easterly winds prevailed until Thursday. Then the winds became S.W. to W.

All through the week ended Saturday, the 21st, the weather—in Ireland especially—remained in a very changeable, showery, rough and cool

condition. In the south of England it was finer and drier, while the northern part of that country and Scotland also experienced very variable weather. This state of things was brought about by the passage eastwards across our northern districts of a succession of depressions, of no great depth indeed, whereas an area of high pressure hung over the Bay of Biscay and France. Hence strong, squally westerly (S.W. to N.W.) winds and frequent showers prevailed, Ireland coming in for the brunt of the bad weather as it swept in from the Atlantic. In Dublin rain was measured on six out of the seven days, and the showers were particularly heavy on Monday, Wednesday, and Thursday. A brief spell of fair weather set in on Friday afternoon, but the showers were renewed on Saturday afternoon after a very sharp night. The weather was highly favourable from an agricultural point of view. In Dublin the mean height of the barometer was 29·900 inches, pressure ranging between 29·644 inches at 9 a.m. of Monday (wind W., blowing a moderate gale) and 30·080 inches at 9 p.m. of Friday (wind, W.N.W.). The corrected mean temperature was 52·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 52·3°. The screened thermometers rose to 61·8° on Wednesday and fell to 40·4° on Saturday. The rainfall was ·579 inch, of which ·228 inch fell on Thursday. Hail fell on Monday, when also there was a moderate westerly gale. The prevailing winds were westerly.

During the week ended Saturday, the 28th, except on Sunday and Monday, when the area of least atmospherical pressure was found over Sweden and the Baltic, the barometer was lowest over the Bay of Biscay, the British Islands, and the Atlantic Ocean. Hence gradients for southerly winds prevailed and the weather was kept in a changeable showery state, particularly in Ireland and Scotland. The southerly winds brought a great rise of temperature to France, Germany, and England, where the weather remained chiefly fine and dry until Wednesday, when a succession of thunderstorms began. On this day, the thermometer rose to 90° in Paris and to 91° at Biarritz—the highest readings in England were 80° at Cambridge, 78° in London and at the North Foreland. On Friday 95° was reached in Berlin and 92° at Belfort, while 76° in London and at the North Foreland and 75° at Cambridge were the highest British readings. Very severe thunderstorms passed over England during this period, and local heavy falls of rain and hail occurred. On Saturday there was an extraordinary downpour of rain in Dublin—1·902 inches falling in six hours between 9 15 a.m. and 3 15 p.m. The mean height of the barometer was 29·731 inches, pressure ranging from 29·902 inches, at 9 a.m. of Sunday (wind, S.E.) to 29·474 inches at 9 p.m. of Saturday (wind, variable). The corrected mean temperature was 57·3°, while the mean dry bulb reading at 9 a.m. and 9 p.m. was 56·8°. The thermometers in the screen fell to 46·0° on

Sunday and rose to 69·5° on Wednesday. The wind was first southerly, then light easterly. The rainfall was 2·378 inches, on six days, 2·056 inches being registered on Saturday. No such daily measurement has been recorded in Dublin since October 27, 1880, when 2·736 inches of rain fell. The present is only the third occasion within the past twenty-seven years on which the rainfall exceeded 2 inches within 24 hours in Dublin.

The last three days of the month were changeable, with fresh or strong southerly to south-westerly winds, cloudy skies, and passing showers at times.

The rainfall in Dublin during the five months ending May 31st has amounted to 10·099 inches on 80 days compared with only 5·995 inches on 63 days during the same period in 1891, 11·483 inches on 76 days in 1890, 10·476 inches on 91 days in 1889, 9·068 inches on 69 days in 1888, 6·489 inches on 62 days in 1887, and a 25 years' average of 10·496 inches on 81·6 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in May, 1892, was 4·695 inches, distributed over 17 days. Of this quantity 1·180 inches fell on the 12th, ·460 inch on the 24th, and 1·560 inches on the 28th. The total fall since January 1st, 1892, equals 9·548 inches on 67 days.

PERISCOPE.

EHRLICH'S TEST OF URINE IN TYPHOID FEVER.

Dr. Arthur R. Edwards, after making 600 analyses of urine, and applying Ehrlich's test, comes to the following conclusions (*Medical News of Philadelphia*, 12th March, 1892):—"1. The reaction is independent of any single disease or any group of diseases. 2. It is frequently found in urine containing albumen, peptone, biliary substances, sugar, aromatics, and possibly leucomaïnes or ptomaïnes. 3. We have failed to obtain more constant results with the absolute alcohol than without its use. 4. Ehrlich's test is not always present in typhoid, even at the acme of the disease; it was absent in 1½ per cent. of our cases. The reaction, therefore, is at best only a presumptive, and not a positive, evidence of typhoid. Its value is on a par with that of gurgling and tenderness in the right inguinal region and inferior to the temperature, roseolæ, and splenic tumour. 5. Together with more reliable signs and symptoms, as temperature, enlarged spleen, &c., it may contribute to a diagnosis of typhoid, and conversely, when absent, in 98½ cases out of 100, the disease is other than typhoid. 6. It is found in many other diseases, some of which, in certain clinical features, may simulate typhoid—*e.g.*, septicæmia, uræmia, tuberculosis in its varied aspects, intestinal,

peritoneal, miliary, &c., as well as enteritis, malaria, and pneumonia. In differential diagnosis, therefore, when other distinctive symptoms are lacking, the sulphanilic acid test is untrustworthy. It fails when most keenly wanted, and may be absent in otherwise typical typhoid fever. 7. If much reliance is placed in the test, a typhoid relapse may be confounded with complications. We have observed, as complications and early sequelæ yielding the reaction, acute nephritis, lobar pneumonia, pulmonary tuberculosis, pleurisy, &c., and would have been at a loss as to the cause if confidence had been reposed in the test. 8. Inasmuch as it occurs typically in many diseases in which the causes and elaborated products differ, and since the various compounds with which the diazobenzene-sulphonic acid unites are as yet unknown, the reaction cannot commend itself to the scientific chemist, however it may be regarded clinically."

TUBERCULIN IN THE DIAGNOSIS OF TUBERCULOSIS IN CATTLE.

Leonard Pearson, B.S., V.M.D., of the Veterinary Department, University of Pennsylvania, records (*Medical News of Philadelphia*, 9th April, 1892) some cases in which he injected tuberculin into cows in order to test whether they suffered from tuberculosis. He writes:—"So far as my experience goes, tuberculin seems to be a safe agent for the diagnosis of tuberculosis in cattle."

PERCENTAGE OF DEATHS IN CHLOROFORM ADMINISTRATION.

Dr. B. W. Richardson (*Asclepiad*, 33) analyses the mortality from chloroform, and concludes that the deaths may be as one in 3,500 inhalations, but that probably one death in 2,000 to 2,500 administrations is nearer the truth, yet even at the lowest rate we employ no other narcotic that approaches chloroform for danger.

THE INFLUENCE OF HEREDITY.

Dr. Woods Hutchinson, writing on the influence of heredity (*Medical News*, Philadelphia, Feb. 13th, 1892), ends thus:—"To sum up roughly, we find a tainted pedigree—

Among	57,000	cases of	insanity,	in	10·1 per cent.
„	30,000	„	carcinoma,	„	10·5 „
„	22,000	„	tuberculosis,	„	37·3 „

These estimates are, of course, made on far too narrow a basis to be regarded as in any way conclusive, and their reliability for positive purposes is open to serious question in many particulars, but I think they at least justify us in demanding, in answer to the charge that heredity is, in any sense, a prominent or active factor in the production of disease, the Scotch verdict of 'Not proven.' On the other hand, all the remedial

power of Nature, individual and racial, all the vigour that defies attack, all the priceless immunity from disease, all the exquisite harmony with environment that surrounds us on every hand, are the direct results and illustrations of the law of heredity. Its beneficent effects are innumerable and unquestionable; its injurious effects few and doubtful."

UNIQUE CASE OF INTUSSUSCEPTION.

Dr. Morris B. Miller reports (*Medical News*, Philadelphia, December 12th, 1891) a unique case of intussusception. The whole of the invaginated portion of the bowel (the pieces measuring in the aggregate fifty-four inches) was discharged a week before death, which did not occur for over a month after the involution took place.

THE HARVARD MEDICAL SCHOOL ASSOCIATION.

This Association has issued an interesting and valuable list of its members, which it will be glad to send to graduates of the Medical Department of Harvard University, in whatever part of the world they may be. The Association was formed about one year ago, and *all* graduates of the School are eligible to membership. The object is to unite all alumni and to advance the interests of the School and of medicine. The entrance fee and the annual assessment are merely nominal.

MEDICO-CHIRURGICAL SOCIETY, GLASGOW.

At the Annual General Meeting of the Society the following gentlemen were elected office-bearers for Session 1892–93:—President: Dr. Joseph Coats. Section of Medicine—Vice-President: Dr. Middleton; Councillors: Dr. Alex. Miller and Dr. Auld; Secretary: Dr. C. O. Hawthorne. Section of Surgery—Vice-President: Dr. W. J. Fleming; Councillors: Dr. Macartney and Dr. Dalziel; Secretary: Dr. John Barlow. Section of Pathology—Vice-President: Dr. J. L. Steven; Councillors: Dr. Charles Workman and Dr. John Brown; Secretary: Dr. R. M. Buchanan. Section of Obstetrics—Vice-President: Dr. Samuel Sloan; Councillors: Dr. M. Cameron and Dr. Lapraik; Secretary: Dr. Lawrence Oliphant. Treasurer: Mr. Henry E. Clark. General Secretary: Dr. Walker Downie.

POPULAR PRESCRIPTIONS.

The *Medical Record* assures us that a well-known Philadelphia pharmacist has recently received the following written orders for medicine:—A dose of castor-oil for a child aged fifteen. Be sure and send enough to work her good. One dozen two-ounce quinine pills; one bottle honeatta water; a boo gee; one box of Brandteth's pills, sugar quoted. Please send enough appecac to throw up a four months old baby; two five-grain blue mask pills; ten cents worth partisapated chalk.

In Memoriam.

WILLIAM COLLES, M.D. UNIV. DUBL., F.R.C.S.I.;

Surgeon-in-Ordinary to Her Majesty the Queen in Ireland;
Consulting Surgeon to Steevens' Hospital,
And to the Rotunda Lying-in Hospital, Dublin.

NOTWITHSTANDING that WILLIAM COLLES had long passed life's mile-stone of four-score years, the tidings of his sudden death on Saturday, June 18, 1892, came to his many friends as a painful surprise. Only a few days before his death, his well-known figure had been seen at the University Club and in the streets of the city. The very end was startling in its suddenness. He had expressed himself as feeling so much better that he was sure his physician would at his expected visit allow him to sit up—a deep sigh or gasp, and in a very few moments all was over!

So died one of the ablest, as he was one of the most modest and retiring, of our Irish surgeons—the worthy inheritor of his father's name—with "honour, love, obedience, troops of friends."

WILLIAM COLLES was born on July 2, 1809, at No. 13 St. Stephen's Green, Dublin. His father was the celebrated surgeon, Abraham Colles, whose description of the fracture of the lower end of the radius has given to this injury the name of "Colles's fracture." His mother was Sophia, daughter of the Reverend Jonathan Cope, Rector of Ahascragh, Co. Galway. Educated at an Irish school, young COLLES was apprenticed to his father on April 11, 1826, and entered upon his professional studies in the School of Surgery of the Royal College of Surgeons in Ireland and at Steevens' Hospital. About the same time he entered Trinity College, Dublin, where he graduated in Arts in the year 1831. On the 9th of July in the same year he obtained the Letters Testimonial of the Royal College of Surgeons, of which he was elected a Member on May 1, 1837. After obtaining his surgical qualification, COLLES spent some time in the hospitals of Vienna, Berlin, and Göttingen. In 1834 he was elected House Surgeon to Steevens' Hospital, a post which he held for the usual term of seven years, when he became Visiting Surgeon to the Hospital—

an appointment which he filled for well-nigh half a century. So long as the Medical School attached to the Hospital was in existence he was one of the lecturers on surgery in it.

In 1841 COLLES graduated in medicine in the University of Dublin, but it was not until 1865 that he proceeded to the higher degree of Doctor of Medicine. In 1844 he became a Fellow of the Royal College of Surgeons in Ireland.

Although modest and retiring in disposition to a fault, COLLES did not long remain without tokens of public and professional esteem. In connection with the Royal College of Surgeons in Ireland he held for many years the honorary offices of Librarian and Secretary. In 1863-64 he was President of his College. He was elected Consulting Surgeon to the Rotunda Lying-in Hospital, and to Sir Patrick Dun's Hospital. But still higher honours fell to his lot, unasked for and unsought. On the death of Mr. Robert Adams, in 1875, he became Regius Professor of Surgery in the University of Dublin, while the Queen marked her appreciation of his professional standing and sterling qualities as a Surgeon by appointing him one of her Surgeons-in-Ordinary in Ireland.

MR. COLLES married, in 1850, Pamella Hatchell, daughter of Mr. Cadwallader Waddy, of the County Wexford, which county at one time that gentleman represented in Parliament. Three children of this marriage survive—Mr. Abraham Colles, who inherits his grandfather's name and practises at the Irish bar; and two married daughters. To his family, it has been well said, WILLIAM COLLES has left "the priceless heritage of an honoured name."

The subject of this memoir was a man of few words, but he contributed to medical literature many papers of sterling merit. The following is a full list of his contributions to the pages of this Journal between the years 1845 and 1888:—

1. "On the Treatment of a Peculiar Form of Disease of the Prostate Gland." First Series. Vol. XXVII. 1845.

2. "Observations upon Urinary Fistula." Second Series. Vol. IV. 1847. Page 57.

3. "Cases of Injurious Effects following the Use of Rye as Food." Vol. IV. 1847. Page 243.

4. "Observations on Nasal Polypi." Vol. VI. 1848. Page 373.

5. "An Improved Method of Operating for Congenital Phimosis." Vol. VII. 1849. Page 250.

6. "On a Peculiar Form of Gonorrhœa." Vol. X. 1850. Page 102.

7. "Case of Femoral Aneurism Cured by Pressure." Vol. XI. 1851. Page 497.

8. "On Traumatic Spasms." Vol. XIII. 1852. Page 33.

9. "Selections from the unpublished Manuscripts of the late Abraham Colles." Vol. XV. 1853. Page 280. Vol. XVI. 1853. Pages 55 and 290. Vol. XVII. 1854. Page 82. Vol. XVIII. 1854. Page 28. Vol. XX. 1855. Page 335. Vol. XXII. 1856. Page 27. Vol. XXIII. 1857. Page 374.

10. "Report of Two Cases in which Ligature was applied to the Posterior Auris Artery." Vol. XIX. 1855. Page 73.

11. "Account of a Case in which Death was occasioned by a Fish-bone penetrating the Aorta through the Œsophagus. Vol. XIX. 1855. Page 325.

12. "On Aneurismal Sacs." Vol. XXI. 1856. Page 53.

13. "Case of Reducible Inguinal Hernia—Radical Cure performed according to Wood's Method." Vol. XXXIII. 1862. Page 243.

14. "Cases of Injuries of the Larger Joints, with Remarks." Vol. XLI. 1866. Page 47.

15. "Case of Trephining the Mastoid Process." Vol. L. 1870. Page 32.

16. "Dr. Sayres' Splint applied to Fractured Neck of Femur." Vol. LIII. 1872. Page 187.

17. "The Treatment of Hæmorrhoids by the Injection of the Tincture of Perchloride of Iron." Vol. LVII. 1874. Page 505.

18. "Case of Necrosis of Femur, with Remarks." Vol. LXIV. 1877. Page 201.

19. "On Aneurismal Sacs." Vol. LXIV. 1877. Page 281.

20. "Necrosis without Suppuration." Vol. LXVI. 1878. Page 453.

21. "The Diagnosis of Cancer of the Testis." Vol. LXXXVI. 1888. Page 1.

22. "The Influence of Position on Fractures of the Lower Extremities." Vol. LXXXVI. 1888. Page 192.

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From "RETROSPECT OF PRACTICAL MEDICINE AND SURGERY," *July*, 1877.

"A glance at the formula of **LACTOPEPTINE** would convince even the most sceptical of the valuable results that must ensue through its administration. It is a combination of all the digestive agents, consequently can never be administered without giving the utmost satisfaction.

Extract from Certificate of Composition and Properties, by

Professor ATTFIELD, Ph.D.,

Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain.

LONDON, *May 3rd*, 1882.

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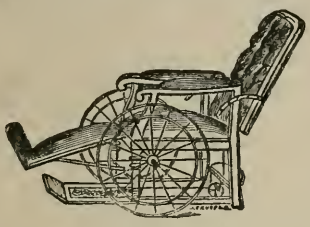

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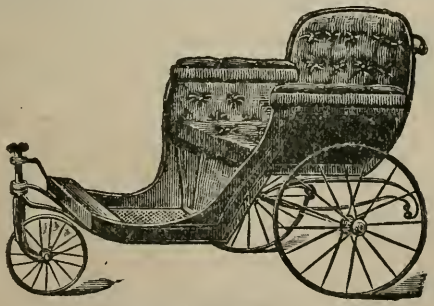

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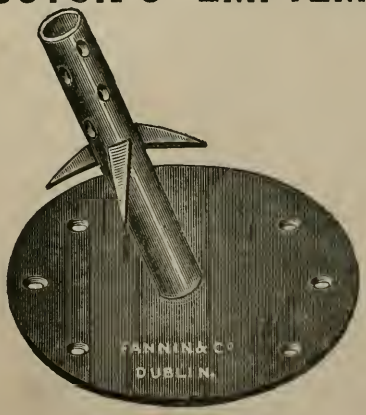

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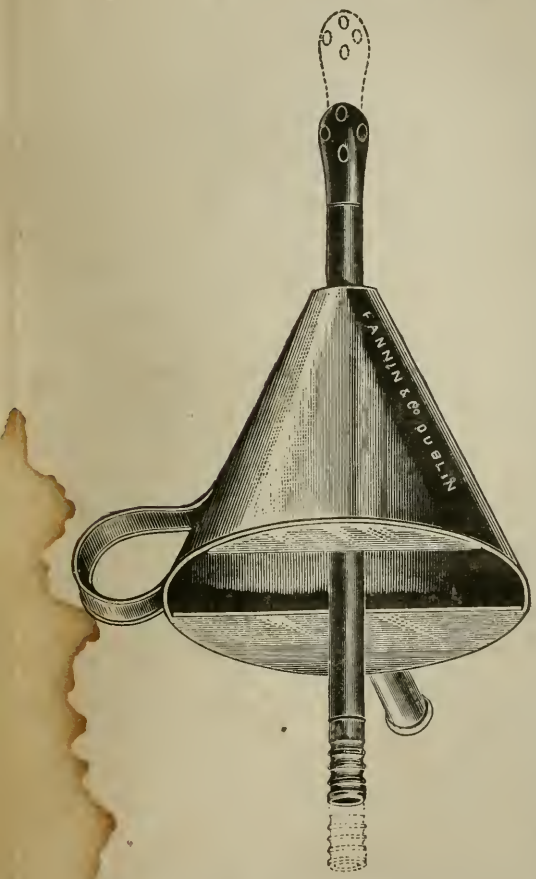

Extract from "Medical Press,"
April 20, 1892.

It is almost an impossibility with the ordinary means at our disposal to wash out the vagina while the patient is in the recumbent position without wetting either the bed or couch on which she lies.

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